MATERIAL ON HIV / AIDS

SENT BY

MEDICAL MISSION INSTITUTE
UNIT FOR HEALTH SERVICES AND HIV / AIDS
SALVATORSTR. 22
D – 97074 WURZBURG
GERMANY

JULY 1998

07850 7810

Community Health Cell
Library and Information Centre
367, " Srinivasa Nilaya "
Jakkasandra 1st Main,
1st Block, Koramangala,
BANGALORE - 560 034

MATERIAL ON HIV/AIDS

SENT BY

MEDICAL MISSION INSTITUTE

UNIT FOR HEALTH SERVICES AND HIV/AIDS

SALVATORSTR. 22

D-97074 WÜRZBURG

GERMANY

COMMUNITY HEALTH CELL
LIBRARY
AND
DOCUMENTATION
UNIT
BANGALORE.

DIS-325
07890 N98

Missionsärztliches Institut Würzburg
Medical Mission Institute

Missionsärztliches Institut, Postfach, D- 97067 Würzburg, Germany

TO ALL RECIPIENTS
OF LITERATURE PARCELS

☐ **Managing Director/Secretariat**
Salvatorstr. 7; D-97074 Würzburg, Germany
Tel.: ++49-931-791-2900, Fax.: ++49-931-791-2801
e-mail: mi.gf@mail.uni-wuerzburg.de

Units:

☐ **Tropical Medicine and Control of Epidemics**
Salvatorstr. 7, D- 97074 Würzburg, Germany
Tel.: ++49-931-791-2900, Fax.: ++49-931-791-2801
e-mail: mi.trop-med@mail.uni-weurzburg.de

☒ **Health Services and HIV/AIDS**
Salvatorstr. 22; D-97074 Würzburg, Germany
Tel.: ++49-931-80485-0, Fax.:++49-931-80485-25
e-mail: mi.health@mail.uni-wuerzburg.de

☐ **Appropriate Technology in the Health Sector**
Herrmann - Schell - Str. 7, D-97074 Würzburg, Germany
Tel.: ++49-931-80485-15, Fax.: ++49-931/80485-20
e-mail: mi.appro@mail.uni-wuerzburg.de

☐ **Cooperation in Need and Disaster**
Salvatorstr. 22; D-97074 Würzburg, Germany
Tel.: ++49-931-80485-17, Fax.:++49-/7841- 441
e-mail: mi.cinad@mail.uni-wuerzburg.de

3 July 1998

Dear friends,

RE: LITERATURE PARCEL 1998

It is our pleasure to send you a literature parcel in 1998 of interesting, and as we think, recommended reading on HIV/AIDS. In November 1997 we told you that, due to financial constraints, our information support to partners in developing countries had to be reduced in quantity. In times of declining financial resources, our critics argue that the mailing list is not specific to the needs of our readers. Therefore, a proactive sending has become more and more difficult. For our support, we still need your feedback and your requests.

Let me come to the contents of the literature parcel sent to you this time. The International AIDS Conference in Geneva clearly showed the growing gap between the knowledge about effective interventions and the increasing number of people infected and affected, in particular in developing countries. New knowledge about the disease and the development of spectacular treatment options have to be put into a realistic global perspective, in order to understand in which way they can help to bridge the gap. Therefore, we have included a comprehensive article on HIV/AIDS, an overview written by Dr. Jon Fuller on top of our parcel. The prevention of mother to child transmission is one of the major fields in which antiretroviral drugs are actually used in developing countries. This simple medical procedure has severe ethical implications which are clearly pointed out in two articles from the Ivory Coast and the AIDS Coordination Group Bureau in the Netherlands. As the care problem rises, the impact of HIV and related illnesses, in particular tuberculosis on health workers has become a growing concern. It is not only lack of training which causes resistance in providing appropriate care. But health workers have a real risk of acquiring opportunistic infections, and in particular tuberculosis. Taking this risk seriously, demands the implementation of appropriate measures of prevention.

Another aspect of the growing care problem is how to assure continuous care from individual and family level to the formal health services. In a 'policy paper' we have drafted and outlined what is meant by home care, what should be considered when setting up these programmes, and what are relevant indicators of quality.

Children and youth are particular target groups for HIV/AIDS activities. Appropriate information and training for behavioural change are meant to help them to face the challenge. UNAIDS and the Institute of Development Study of the University of Southern Sussex give valuable background information and assistance to develop effective approaches. In this context we want to draw your attention to a comprehensive book about child and sexual health, called "Caring with Confidence", which has been produced by AHRTAG. This organisation, which will in future carry the name HEALTH LINK, offers free copies to partners in developing countries; you find further information in the parcel. The article by Josef Decosas about migration and HIV offers good reading on social aspects of HIV/AIDS.

Last, but we think, not least, our work has focused a bit on theological and pastoral aspects of HIV. We have asked a student in theology to review and appreciate statements of the Catholic Church regarding infection protection. We found his paper so interesting, that we translated it from German to English and are sending it for your personal use as it has not yet been published.

At the end, we would like to draw your attention to the letterhead. It reflects the outcome of the restructuring process which the Medical Mission Institute has undergone in recent months. The Institute has established itself as a kind of consultancy group for Church-related organisations, i.e. the implementors of programmes and projects in developing countries as well as their respective funding and support organisations in the North. We offer our services for project accompaniment, assessments, evaluations and training in the fields of health service management and health promotion, tropical medicine and HIV/AIDS to all organisations to whom it seems suitable. Please do not hesitate to contact us if you are interested.

We look forward to deepen our collaboration with you.

With our best wishes

Gesine Ruppert-Mann Joachim Rüppel Klemens Ochel Traudl Solleder

TABLE OF CONTENTS

1. **Fuller, J.D.:** HIV/AIDS: An Overview. 1997. 49 p.
2. **Wiktor, S.Z., Ekipini, E., and R.W.Nduati**: Prevention of mother-to-child transmission of HIV-1 in Africa. AIDS. Vol.11 (1997) Suppl. B: S79-S87
3. **AIDS Coordination Group:** Prevention of perinatal HIV transmission. 1998. 14 p.
4. **Medical Mission Institute:** Recommendations on: Care at home for patients with AIDS in resource poor countries. 1998. 6 p.
5. **Decosas, J., and A.Adrien:** Migration and HIV. AIDS. (1997) Suppl. A: S77-84
6. **UNAIDS:** Force for Change: World AIDS Campaign with Young People. 1998 World AIDS Campaign. Briefing Paper. 1998. 20 p.
7. **Institute of Development Studies:** The SHIP: Sexual Health Information Pack. 1997. 26 p.
8. **Coleman, R.L., D. Wilkinson, and K.P.W.J. McAdam**: Voluntary lay supervisors of directly observed therapy for tuberculosis in Africa. Tropical Doctor. Vol. 28 (1998) 76-80.
9. **Harries, A.D., Maher, D., and P. Nunn:** Practical and affordable measures for the protection of health care workers from tuberculosis in low-income countries. Bulletin of the World Health Organization. Vol. 75 (1997) 477-489
10. **AHRTAG:** HIV and its impact on health workers. AIDS Action. Issue 38 (1997)
11. **AHRTAG:** Saving lives in hospital. Child Health Dialogue. 1996 Nos.3/4
12. **UK AIDS Consortium**: Statement from the International Seminar on Access to Treatment for HIV in Developing Countries. (1998) 2 p.
13. **MAP/ Monitoring the AIDS Pandemic:** The Status and Trends of the HIV/AIDS Epidemics in the World. Provisional Report. 1998. 27 p.
14. **Kiefer, M.:** Positions within the catholic church regarding the subject „Protection against infection in the context of HIV/AIDS". 1998. 11p.

1

MATERIAL ON HIV/AIDS

SENT BY

MEDICAL MISSION INSTITUTE

UNIT FOR HEALTH SERVICES AND HIV/AIDS

SALVATORSTR. 22

D-97074 WÜRZBURG

GERMANY

HIV / AIDS: An Overview

1: The Virus

Background and History of HIV

The human immunodeficiency virus (HIV), the causative agent of AIDS, appears to have evolved during the past 200 years as a mutation from the simian immunodeficiency virus (SIV), a virus found in old-world primates that in most cases is not associated with disease. Although it is not clear how primate viruses subsequently crossed over to the human population, it is likely that incursion into previously undeveloped geographical areas may have led to the first human contact with HIV. Although related immunodeficiency viruses can cause an AIDS-like disease in cats, mice, cattle, sheep, goats, and some monkeys, in nature HIV's devastating effects occur only in human beings.

[Note: this paper focuses on human immunodeficiency virus type 1 (HIV-1), the dominant strain of HIV in the world. Human immunodeficiency virus type 2 (HIV-2) can also cause AIDS, but is quite limited in its geographic spread and is not as virulent or easily transmitted as HIV-1. In this paper "HIV" refers to HIV-1 unless otherwise indicated.]

The first documented HIV infections in humans (retrospectively identified) occurred in the 1950's, although some controversy exists about the HIV status of the second of these cases[1,2] The first case in the United States (also retrospectively identified) occurred in a St. Louis teenager in 1969.[3] However, HIV did not affect a sufficient number of persons to draw attention to this new disease until 1981. In that year, clusters of gay men from Los Angeles, San Francisco and New York with unusual tumors (such as Kaposi's sarcoma) and infections (such as *Pneumocystis carinii* pneumonia) led investigators to appreciate that a new disease entity was occurring in the human community, one that we have now come to know as the acquired immunodeficiency syndrome, or AIDS.[4-6] Two years later (in 1983) the AIDS virus (HIV)[7] was discovered, in 1985 an antibody test to detect the presence of HIV infection was licensed, and in 1987 the FDA approved zidovudine (AZT) as the first anti-HIV drug.

Acquiring HIV-infection

HIV can gain access to the body in three ways: 1) by direct contact with the bloodstream (e.g., when needles are shared during drug injection, during transfusion of contaminated blood or blood products, or by transfer across the placenta from an infected mother to a developing fetus); 2) through contact with mucous membranes (e.g., during sexual intercourse or during the birth process); or 3) through ingestion of infected breast milk by infants.

HIV / AIDS: AN OVERVIEW

Jon D. Fuller, M.D.

Assistant Director, Clinical AIDS Program, Boston Medical Center
Assistant Clinical Professor of Medicine, Boston University School of Medicine

Revised February, 1997

Table of Contents i
1: The Virus 3
Background and History of HIV 3
Acquiring HIV-infection 3
Cell Entry 4
HIV's Single Chromosome 4
HIV Compared with a Computer virus 4
Translation of Genetic Information: RNA to DNA 5
Splicing HIV Genes into the Human Chromosome 6
Viral Replication 6
2: Natural History of HIV Infection 7
Primary HIV Infection 7
Clinical Latency 7
Late Stage Disease 7
Immune System Response to HIV 8
Antibody Response 8
Cellular response 8
Destruction of CD4 cells by HIV 9
Helper Cell Depletion Over Time 9
HIV and CD4 Destruction 10
Will Everyone Infected with HIV Develop AIDS? 11
Factors Affecting Progression 12
Viral load 12
Viral Strain and HIV Source 12
Cellular Immune System Strength 13
Mutations in HIV Co-Receptors 13
Age 14
3: The AIDS Case Definition 15
4: HIV Disease Manifestations 17
Opportunistic Infections 17
Opportunistic Infections: Yeasts 17
Opportunistic Infections: Protozoa 18
Opportunistic Infections: Viruses 19
Opportunistic Infections: Bacteria 19
Summary of Opportunistic Infections 20
Neurologic Disease 21
Slim Disease: The AIDS Wasting Syndrome 23
Kaposi's Sarcoma 23
Cervical and Anal Cancer 24

Lymphoma 24
Conclusion: HIV Clinical Manifestations 24
5: The HIV Antibody Test. 25
Antibody Testing: A Two Step Procedure 25
The Accuracy of Antibody Testing. 26
Other Considerations in Antibody Testing 27
6: Transmission of HIV 29
Modes of HIV Transmission 29
HIV Present in Certain Body Fluids 29
Sexual Transmission 30
Factors Increasing the Risk of Sexual Transmission 30
Reducing HIV Transmission During Sexual Activity. 31
Sharing Needles 32
Perinatal Infection 33
AZT to Prevent Perinatal Transmission 33
Blood Products 34
No Casual Transmission 34
Inactivating HIV. 35
Risk to Health Care Workers. 35
Risk Posed by HIV-Infected Health Care Workers 36
7: Epidemiology of HIV. 39
HIV Infections and AIDS Cases in the U.S. 39
HIV Infections in Women 39
Racial/Ethnic Distribution of U.S. AIDS Cases. 40
Impact of AIDS on Mortality. 41
Adolescents and HIV Infection. 41
Global HIV/AIDS Epidemiology 42
8: Treatment and Prevention 41
Antiretroviral Therapy 41
Reverse Transcriptase Inhibitors. 41
Nucleoside Analogues 41
Non-nucleoside Analogues 42
Protease Inhibitors 42
Approach to Antiretroviral Therapy. 42
Preventing Opportunistic Infections 43

Copyright 1997 by Jon Fuller; all rights reserved. Non-profit organizations are hereby given permission to copy this manuscript. To obtain more copies or to inquire about *Overview* updates, please contact the New England AIDS Education and Training Center, University of Massachusetts Medical Center, 55 Lake Avenue North, Worcester, MA 01655; 508-856-3255; fax 508-856-6128.

Cell Entry

Since the membrane which surrounds every cell acts as an effective barrier to most viruses, HIV which has entered the bloodstream is prevented from infecting most human cells. However, certain immune system white blood cells known as CD4 cells (also known as T4 or helper cells) have proteins known as CD4 receptors on their cell membranes that normally function as part of the immune system's mechanism for recognizing and responding to foreign agents (see Figure 1).

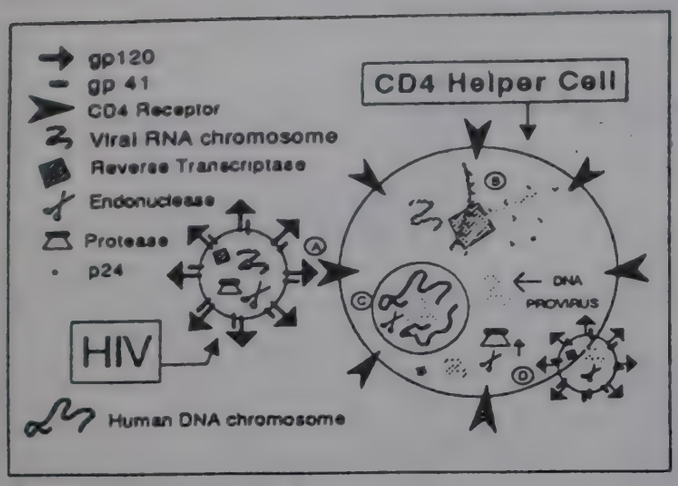


Figure 1: HIV / CD4 cell interaction.

A protein spike known as gp120 which protrudes from the surface of HIV happens to fit rather well into a cleft in the surface of the cell's CD4 receptor. (In the gp120 protein, "gp" indicates that the protein has glucose particles attached to it - that is, it is a glycosylated [or "glucosed"] protein; 120 refers to the protein's size). When viral gp120 interacts with the cell's CD4 receptor, the viral envelope fuses with the cell membrane, bringing HIV and its chromosome inside the cell (Figure 1, letter A).

HIV's Single Chromosome

Like all viruses, HIV is not "alive" in the classic sense that we envision for organisms such as bacteria, fungi, or cells. HIV is structurally quite simple, being largely comprised of a protein envelope which encases HIV's single chromosome. (In contrast to the 23 pairs of chromosomes possessed by human beings, HIV has only a single chromosome which is made up of approximately 10 genes. Some of these genes code for the virus's structural proteins; others carry blueprints for regulatory proteins that will influence viral reproduction.)

Because HIV is unable to synthesize protein, it is unable to reproduce on its own. In order to replicate, it must infect a more complex, protein-synthesizing organism (in this case, CD4 cells), and then direct those cells to manufacture proteins for the virus.

HIV Compared with a Computer virus

Because the blueprints for assembling HIV proteins are contained in the chromosome that HIV transport's into human cells, HIV's relationship to the human cells it infects can be compared with a computer virus infecting a personal computer. Both HIV and computer viruses are "inert" packages of information (computer files or genes on a chromosome) until these files are "downloaded" to the host computer's hard disk (or integrated into human chromosomes) where they can then take charge of the computer (or direct cellular production of viral proteins).

Translation of Genetic Information: RNA to DNA

Since the virus's ultimate goal is to reproduce itself by commandeering the cell's protein synthesizing capacity, HIV must provide its genetic information in a form which the cell's protein factories (ribosomes) can recognize. However, this requires a preliminary translation step, since the manner in which genetic information is stored in HIV is different than that in humans.

To understand the translation step which comes next, it is helpful to review the process the cell normally uses to make human proteins from information stored in human chromosomes (see Figure 2). Human "Master File" information is stored in the form of DNA (deoxyribonucleic acid) in chromosomes in the cell nucleus (analogous to a hard disk). When proteins are to be made, a copy of information from the master DNA file is made in the nucleus and transferred to the cytoplasm (the part of the cell outside the nucleus) where proteins are made. The transfer file is known as *messenger RNA* (messenger ribonucleic acid, or mRNA). The messenger RNA file is used to direct the manufacture of a particular human protein (such as hemoglobin) from the blueprint stored in the master file. Thus, the usual (or "forward") direction in which information flows in nature is from DNA to messenger RNA to proteins.

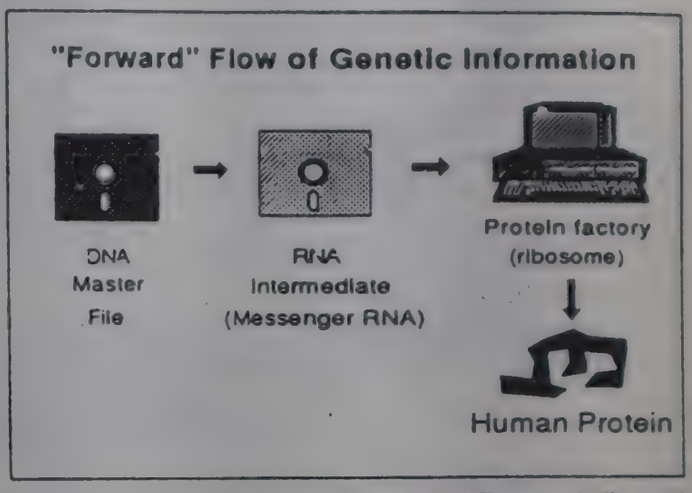


Figure 2: "Forward" flow of genetic information in nature.

In contrast to human chromosomes which are composed of DNA, the chromosomal master file for HIV is composed of RNA. The difference between these two forms of chromosomal information (RNA vs. DNA) can be compared to two computer floppy disks which have files recorded in different languages, e.g., one could be in French, the other in English. The information in both files has the same meaning, but it is expressed in different formats. The problem for HIV is that the human cell cannot directly use genetic information which originates as an RNA master file. HIV's RNA (French) files must therefore be translated into English (DNA) before the cell can read and use them.

To accomplish the translation, the virus brings with it an enzyme (a chemical catalyst) called *reverse transcriptase* (see Figure 1, letter B). Reverse transcriptase transcribes into "English" (DNA) the meaning of the virus's "French" (RNA) chromosome using DNA letters available in the cell. This DNA product of reverse transcription is known as a *provirus*, and carries all the information needed to make an infinite number of viruses (see Figure 2).

This "reversed" direction of information flow - beginning with an RNA master file to make a strand of DNA - is called "reverse" transcription, and accounts for the fact that HIV belongs to the *retro*virus family. As will be seen in more detail later, the first class of drugs that was

licensed against HIV are targeted at the reverse transcriptase, and thus are known as reverse transcriptase inhibitors.

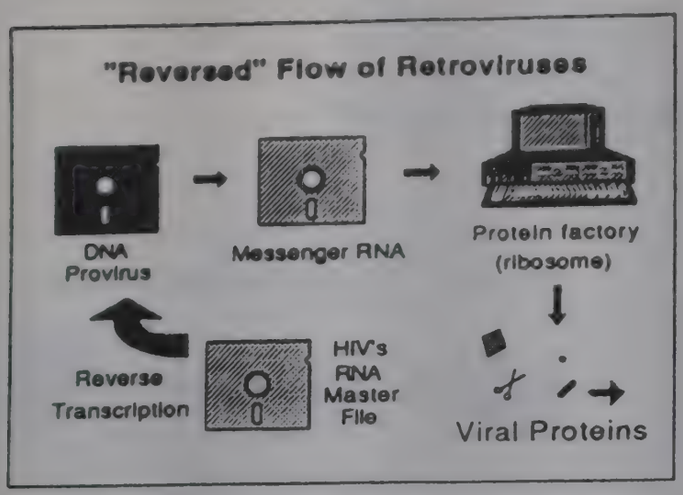


Figure 3: "Reversed" flow of genetic information with HIV.

Splicing HIV Genes Into the Human Chromosome

After a DNA copy of the viral chromosome (the provirus) has been made by reverse transcription, the provirus is transported from the cytoplasm into the cell's nucleus. In the nucleus another viral protein called the endonuclease (shown as a pair of scissors in Figure 1, letter C) cuts open one of the human chromosomes and inserts the provirus. This integration of the provirus into a human chromosome is analogous to transferring a computer virus from a floppy disk to a hard disk; it has now become a permanent part of the cell. If this HIV-infected cell reproduces itself, when it passes copies of its human chromosomes to daughter cells it will also copy and pass along the viral genes as if these were its own.

This *chromosomal insertion* is a unique feature of the retroviruses, and is the reason why clearance of HIV from infected individuals represents such a challenge. Even a single cell carrying integrated viral genetic information is capable of generating an infinite number of viruses. However, the possibility has recently been entertained that eradication of HIV from individuals could be achieved if complete suppression of virus replication can be maintained for a period of time longer than the lifespan of infected cells.

Viral Replication

As seen at lower right in Figure 1 (letter D), viral proteins made by the cell are then assembled at the cell membrane to produce new daughter virus particles that bud from the surface of the cell. Some of the viral proteins made by the cell from HIV's blueprints are actually produced as "polyproteins," or larger molecules that must be cleaved into small sub-parts before they become functional. The virus carries with it a protein known as the HIV protease which chops up these polyproteins into their functional components (shown in Figure 1, Letter D as a chopping blade). As will be discussed below, a new class of anti-HIV drugs (protease inhibitors) has been developed which inactivate the protease. Protease inhibition results in production of viruses that are unable to replicate.

2: Natural History of HIV Infection

Primary HIV Infection

Within days to weeks after HIV is transmitted to an individual, there is an initial, intense burst of viral replication which is associated with a rise in the amount of virus measurable in the bloodstream.

Symptoms of the *acute HIV syndrome* may appear at this time as a result of widespread viral spread in tissues which range from the brain to the lymph nodes (see Figure 4). These symptoms may include low grade fever, rash, sore throat, swelling of the lymph nodes (especially under the chin, in the neck, in the armpits, and in the groin), irritability, diarrhea and abdominal cramping, and muscle and joint pain.

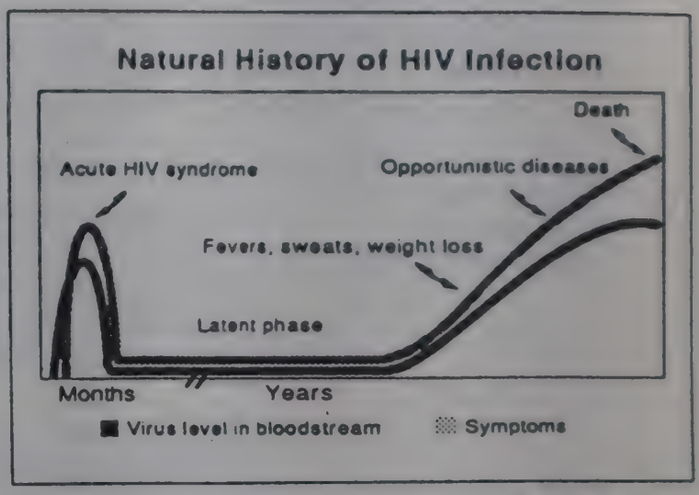


Figure 4: Virus concentrations and symptoms over time.

Since persons experiencing this mononucleosis-like syndrome may reasonably attribute symptoms to a severe cold or "the flu," those with relatively minor manifestations may not seek medical attention. As a general rule, symptoms of the acute HIV syndrome will generally disappear within days to weeks.[8-12]

Clinical Latency

Following this initial period of brisk replication, HIV enters a prolonged "latent phase" during which there is still ongoing viral replication occurring in the bloodstream and in the lymph nodes, but at much lower levels than was seen during the acute HIV syndrome. However, with the possible exception of tender swelling of lymph nodes, there are no symptoms at this time to suggest the presence of HIV. An HIV-infected person will look and feel well during this phase, but he or she *is* still capable of transmitting the virus to others.

Late Stage Disease

As the latent phase ends (after a period that can range from 1 to more than 17 years), the capacity of lymph nodes to filter and retain viruses breaks down, previously swollen lymph nodes may become smaller, and concentrations of virus in the circulating blood may begin to climb.[13,14]

As occurred after the first burst of viral replication, this second rise in virus levels is accompanied by symptoms (see Figure 4). However, unlike the transient manifestations of the acute HIV syndrome, these represent persistent, more threatening manifestations of HIV infection that may lead to a diagnosis of AIDS, as will be discussed in more detail below.

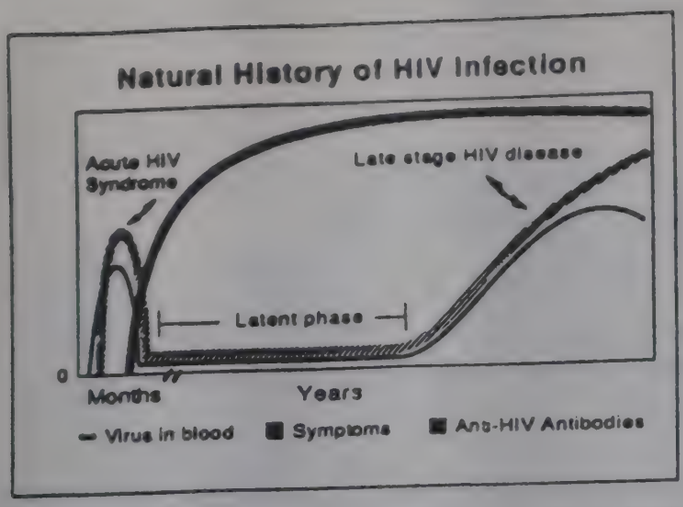


Figure 5: The development of an antibody response to HIV.

Immune System Response to HIV

The immune system contributes to the initial reduction in HIV load in at least two ways: through the development of antibodies against HIV (seen in Figure 5), and through the programming of cells against HIV and HIV-infected cells (the cellular response.)

Antibody Response

Antibodies are custom-made proteins which the body creates to fight against infectious agents. In most instances these neutralize an invader and also confer long-lasting protection. This explains why we only get mumps or measles one time: we develop antibodies during the initial exposure which both terminate the acute illness and provide immunity against subsequent re-exposures to the same virus.

In the case of HIV, while antibodies may help to protect from development of disease, they do not prevent illness from ultimately occurring. Most persons who are diagnosed with AIDS also have antibodies against HIV.

Since the antibody test is run on blood serum, someone with antibodies against HIV is referred to as being *seropositive*. A person who has gone from *seronegative* (a negative antibody test) to seropositive is referred to as *seroconverting*. (See Chapter 5 for a more detailed discussion of HIV antibody testing.)

Antibody production in response to HIV takes at least 3-12 weeks to develop following infection, and may take as long as six months. Although very rarely delays of up to 36 months have been reported for seroconversion, 6 months is the usual outside limit for the development of an antibody response after HIV infection.[15-17]

Cellular response

Although the cellular immune response is less well understood than the antibody response, the important role that cellular immunity plays in fighting against HIV is being increasingly appreciated. For example, cytotoxic (cell-killing) T lymphocytes (white blood cells) appear to play a very important role in suppressing the initial level of HIV in the bloodstream. Cytotoxic T lymphocyte (CTL) activity in some individuals appears to be much stronger than in others, most likely on the basis of differences in genetic inheritance. As will be discussed below, differences in CTL response may account for some of the differences in progression of HIV disease that are observed between individuals.

Destruction of CD4 cells by HIV

The human immune system is a complex, interconnected network of chemical and cellular processes which defend us against a multitude of invading organisms. Overall control of the immune system's response to infectious agents is shared by two subgroups of white blood cells: CD4 helper cells and CD8 suppressor cells (see Figure 6).

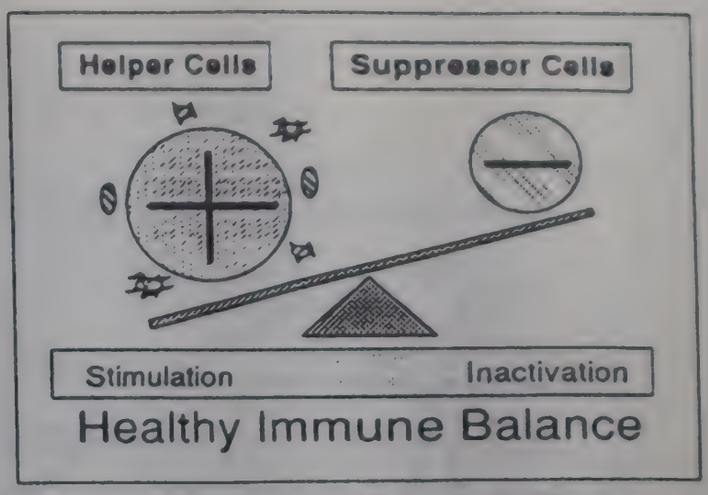


Figure 6: Healthy immune system: Helper cell dominance.

Helper cells send the immune system a stimulating, or "on" signal, whereas suppressors counterbalance this with a suppressing, or "off" signal. One can imagine that these two cell populations are positioned on either side of a seesaw balance; the net signal that results from these two influences controls the immune system's overall response by tipping the seesaw in one direction or another, either stimulating the immune system or suppressing it.

In a healthy person, the presence of infectious agents (suggested in Figure 6 by the small symbols surrounding the helper cells) stimulates them to send a strong activating signal to the immune system, tipping the balance in favor of a vigorous immune response. After invading organisms have been neutralized, the suppressor cells appropriately turn down the immune system to prevent over-activity that would result in autoimmune disease.

How does HIV affect this balance? Because the CD4 receptors on helper cells allow them to become infected with HIV, they are eventually destroyed when HIV goes through a replication cycles and releases daughter viruses from the cell. This causes a relative deficiency of the CD4 population, and as a result of the now dominant suppressor signal, the immune system is unresponsive despite the presence of infecting organisms (Figure 7).

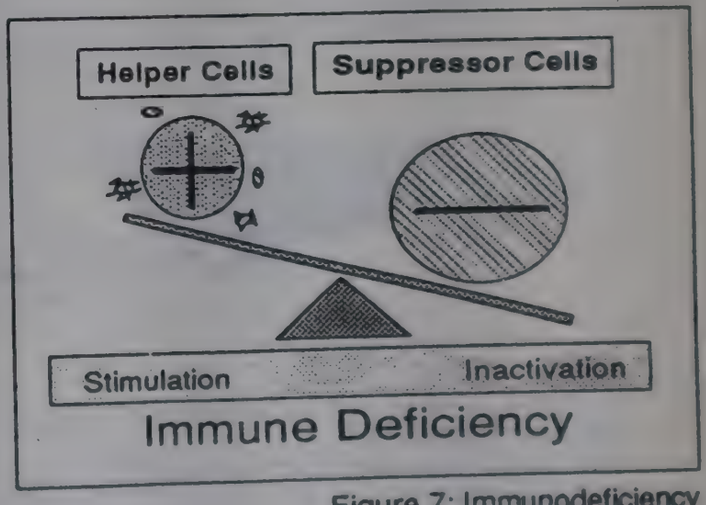


Figure 7: Immunodeficiency due to suppressor dominance.

Since helper cell dysfunction is not congenital, that is, it is acquired with HIV-related destruction, the collection of secondary diseases caused by HIV is referred to as the *acquired* Immunodeficiency syndrome (AIDS).

Helper Cell Depletion Over Time

A normal helper count is generally greater than 800/ml (1 ml = 1 milliliter = 15 drops). One can observe a transient decline in the CD4 helper cell count during the acute HIV syndrome, but this generally rebounds to baseline (see Figure 8). Thereafter a more gradual decline

in the CD4 count is seen which averages about 10% of the CD4 count each year, or 60-80 cells/ml/year.

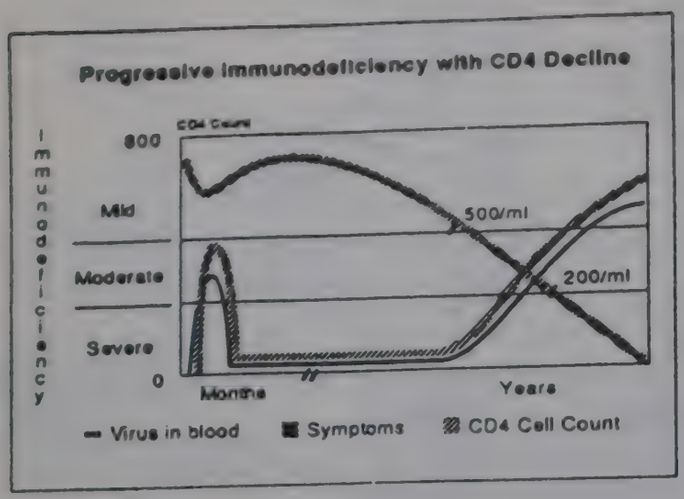


Figure 8: Increasing immunodeficiency caused by progressive decline in CD4 cell count.

A CD4 count between 500 and 800 represents moderate immunosuppression and could be accompanied by minor infections such as oral yeast infections or herpes simplex virus (HSV) infections of the mouth or skin. Counts less than 200 represent severe immunosuppression and signify a high risk for developing severe and life-threatening HIV-associated infections such as *Pneumocystis carinii* pneumonia or *Toxoplasma gondii* encephalitis.[18-20]

HIV and CD4 Destruction

One of the most important advances in recent years has been the development of techniques that can accurately measure the quantity of circulating HIV particles. These tests are known as "viral load" or "viral burden" assays, because they attempt to quantify the number of virus particles that in any individual at a given time. While early versions of these tests could only detect HIV if there were at least 10,000 particles/ml, newer assays are able to reliably detect as few as 500 viral particles/ml.

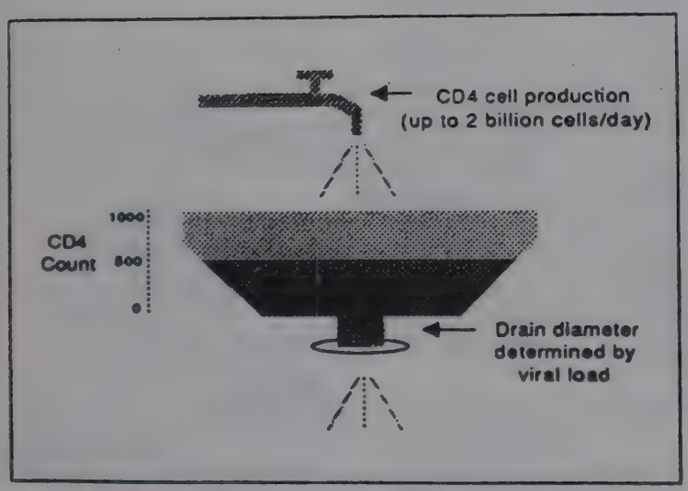


Figure 9: Relationship between CD4 production, HIV replication, and CD4 destruction

The use of these assays has allowed scientists to scrutinize the "life cycle" of HIV much more closely, and also to study the relationship between HIV replication and CD4 destruction. It is now clear that there is an extraordinary amount of HIV replication going on in most HIV-infected individuals, with up to 1-10 billion HIV particles being produced each day. Virus particles that are released into the bloodstream from CD4 cells have a half-life of only 6 hours; if they do not infect new CD4 cells quickly, they will be cleared from the body.[21-23]

It has also become clear that CD4 cell production is a very dynamic process, with up to 2 billion CD4 cells being produced each day by the immune system, even in individuals with late-stage disease and low CD4 counts. This implies that if viral replication could be arrested - stopping the destruction of CD4 cells - then even persons with low CD4 counts could experience a rise in their CD4 counts.

The relationship between CD4 cell production and destruction, and HIV replication, has been schematized in Figure 9 as a faucet, sink and drain. In this model, in which the sink represents the body, the faucet (representing the immune system) is turned on all the way, producing at least 1 billion CD4 cells per day. These pour into the sink which has

a fixed volume, but are also leaving the sink through its drain. Since the flow into the sink and the sink's size are fixed, the "water level" that becomes established (the CD4 count) is determined by the balance between water inflow and water outflow. This is in turn determined by the size of the drain, which is proportionate to the HIV replication rate. A high "viral load" implies that there is a large drain, rapid destruction of newly produced CD4 cells, and a low CD4 count as a result. If viral replication can be stopped, the drain reduces in size and the water level (CD4 count) can rise.

Will Everyone Infected with HIV Develop AIDS?

While some individuals may progress to an AIDS diagnosis within a few years of becoming HIV-infected, others are not diagnosed with AIDS despite 10 years of more of infection. One of the longest-studied populations of HIV-infected individuals with known dates of seroconversion is a group of young gay men recruited in San Francisco during the 1970's as part of a Hepatitis B study (The San Francisco City Clinic Cohort, or SFCCC). Blood samples from participants were collected several times each year and then frozen. When the HIV antibody tested was licensed in 1985, stored blood samples could be thawed and tested for HIV antibodies, allowing investigators to "look back" in time to determine the date of seroconversion for those who had become HIV-infected. As seen in Figure 10, at 10 years after infection 50% of this group had developed AIDS, and at 17 years the number had increased to 79%. However, even after 17 years 13% remain undiagnosed with AIDS. Individuals who remain undiagnosed after more than 10 years of being infected are known as long-term non-progressors (LTNP's).[24] (Although the definition of a LTNP varies somewhat between studies, it generally implies at least 10 years' duration of HIV infection without antiretroviral therapy, the absence of HIV-related symptoms, and CD4 counts above 500.

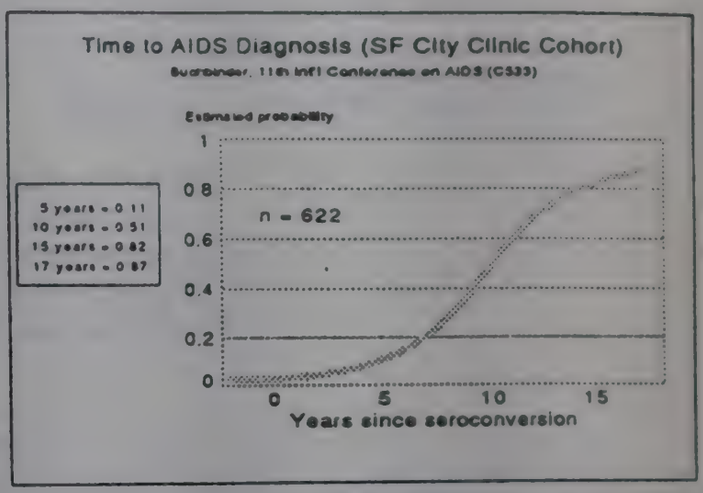


Figure 10: Time to an AIDS diagnosis in the San Francisco City Clinic Cohort

While the existence of long-term term non-progressors has been recognized for several years, it has been unclear whether this group represents individuals who have a qualitatively different response to HIV that will prevent them from ever becoming ill, or whether they represent the extreme end of a continuum of progression rates.

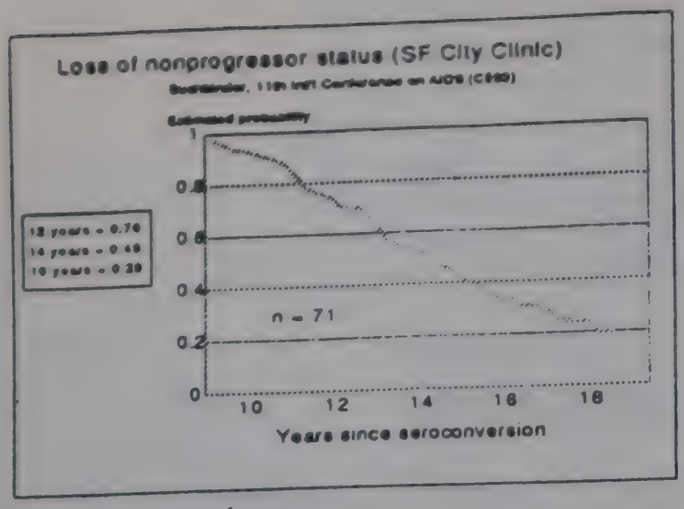


Figure 11: Loss of non-progressor status in the San Francisco City Clinic Cohort

Data reported from the SFCCC now suggest that if followed long enough, in the absence of treatment most LTNP's will lose their non-progressor status and develop an AIDS diagnosis.[24] (Figure 11 shows that by 18 years after being infected [8 years after being designated LTNP's], 80% of the LTNP's have lost their LTNP status after being diagnosed with AIDS.) Thus, over time, untreated HIV infection appears to lead to an AIDS diagnosis in virtually all infected individuals.

Factors Affecting Progression

Viral load

With the advent of viral load assays, it has also become possible to study infected individuals over time in order to analyze the relationship between viral load and subsequent development of an AIDS diagnosis. A number of studies now suggest that after the initial high burst of viral replication during the acute HIV syndrome, a struggle occurs between each particular individual's immune system and the viral strain with which the individual has been infected. As a result of this encounter, the initially high virus load is reduced to some "set point" which becomes established within 6-12 months after infection and which remains remarkably stable thereafter.[25] Viral set points can vary dramatically between individuals, with values ranging from undetectable (<500) to more than 1.6 million/ml. As seen in Figure 12, each set point is associated with a specific risk of progressing to an AIDS diagnosis in a given period of time.[26] Fortunately, antiviral therapy is able to reduce the set point in many individuals, resulting in a modification of their risk of progression to AIDS.

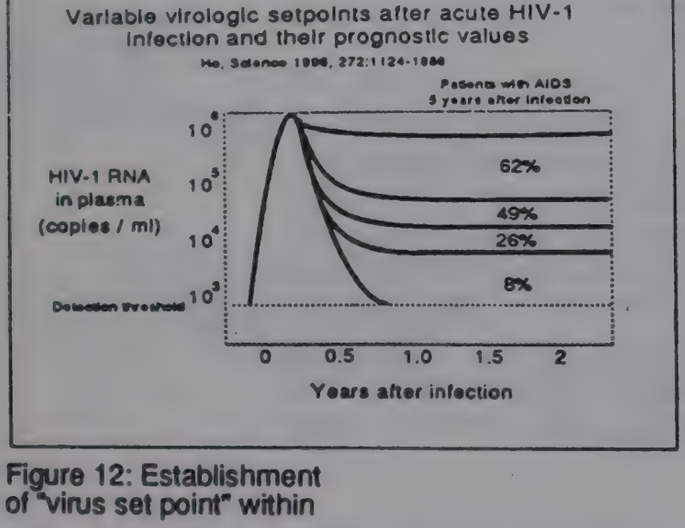


Figure 12: Establishment of "virus set point" within 12 months of HIV infection

Viral Strain and HIV Source

Many different substrains of HIV-1 exist, often with quite different properties. Some are characterized by their virulence and capacity to produce aggressive disease in a relatively short period of time, while others may be weakened because of gene deletions.[27]

Virulent HIV strains can arise by mutations that result from errors in the process of reverse transcription. For example, one small change in the envelope protein can lead to a mutation known as an SI (syncytium inducing) virus, named for its capacity to cause clumping of cells known as *syncytia* when HIV is grown in cell culture. SI viruses, in contrast to NSI (non-syncytium inducing) wild types, are associated with a longer

and more symptomatic acute HIV syndrome, more rapid appearance of resistance to AZT, and more rapid progression to AIDS and death than is seen with NSI viruses.[28-33]

HIV in individuals who have been infected for a relatively long period of time will have had more opportunities (during more viral reverse transcription cycles) to develop into an SI variant, and infections acquired from those with late stage disease can for this reason be associated with more rapid development of disease. (Persons with late stage infection are also more likely to have a high concentration of virus in their blood, increasing the possibility of transmission if exposure occurs.[34,35])

Even apart from the impact of SI vs. NSI strains, the degree and length of the acute HIV syndrome has been associated with subsequent progression of HIV disease.[36,37,38]

Cellular Immune System Strength

One study of commercial sex workers in Nairobi, Kenya, suggested that persons with certain genetically determined characteristics of the immune system appeared to be resistant to becoming HIV-infected despite continuous exposure to HIV, while other genetic types may have a predisposition to becoming infected after exposure.[39] Indeed, some of the long-term non-progressors from the SFCCC mentioned above appear to have genetically determined characteristics of their immune systems that may contribute to their ability to resist progression even though HIV infection has occurred.[40]

One plausible explanation for individuals with apparent resistance to becoming infected, or apparent resistance to progressing after infection has occurred, is that the cellular arm of their immune response is particularly strong. The possibility exists that a strong cellular response of the immune system (known as CMI: cell-mediated immunity) can protect from HIV or control an existing HIV infection. This has lead to a intense interest in studying the role that CMI plays in the response to HIV, including the potential role it could play in anti-HIV vaccines.

Mutations in HIV Co-Receptors

As already described, the CD4 receptor appears to be necessary for HIV to infect cells, and thus the CD4 helper cell is a major target of HIV. There are other cells with CD4 receptors which can also be infected by HIV, however, including a group known as macrophages. (As will be discussed later, macrophages may account for HIV's transport into the central nervous system.)

Although it was known for many years that the CD4 receptor was necessary for HIV entry, it also appeared that it was insufficient in itself, and that other co-receptors are also necessary for HIV to enter cells. One of the most important advances in understanding the natural history of HIV infection has been the identification of co-receptors that HIV uses to infect cells. In fact, different HIV strains may have varying

propensity for infecting Helper cells vs. macrophages, and this may be in part due to the fact that different coreceptors can be present on these cells.[41-44]

Rare individuals have now been identified who have a genetic defect in one of these coreceptors (known as CCR5). Individuals with two copies of the defective gene appear to have cells that are strongly protected against becoming HIV infected, while those with one defective and one wild-type gene may have a slower progression of disease if HIV infection has become established.[45,46] Because patients with defective receptors do not appear to have any other associated deficiencies in their immune system, it may be possible to block the normal coreceptor as a therapeutic strategy, thus mimicking a defective receptor without interfering with other critical functions of the immune system.

Age

Extremes of age (infancy or early childhood, and being older than 50 years) bring with them a propensity to progress more rapidly to late-stage HIV disease than for those in the intervening years. For those between these extremes, an average of 10 years elapses from HIV infection to the development of AIDS.[47,48]

Estimates in the early years of the AIDS epidemic of the prognosis for HIV-infected infants indicated that up to 80% would be diagnosed with AIDS by the time they reached their third birthday.[49] However, these reports were hampered by difficulty in ascertaining the total number of HIV-infected children.

More recent studies based on techniques which allow a better ascertainment of infected infants at the time of birth have suggested that only 15-20% of infants are diagnosed with AIDS in their first year of life, with an additional 2-3% being diagnosed in each subsequent year.[50] Because maternal antibodies against HIV easily cross the placenta, virtually 100% of infants born to seropositive mothers will also be seropositive at birth, although a much smaller percentage are actually infected with HIV. (Since maternally-derived antibodies against HIV can be present in the infant for as long as 15 months, the antibody tests against HIV used in adults are not reliable in infants until 15 months of age.)

Patients who are more than 50 years of age when infected with HIV (including the majority of persons who have been infected from blood transfusions) have a median incubation period (defined as the time required for 50% of a group to be diagnosed with AIDS) of 5 to 7 years.[51-54]

3: The AIDS Case Definition

The manifestations of HIV infection have been classified in a number of ways. In order to very accurately track the spread of the most serious manifestations of HIV disease, early in the epidemic the Centers for Disease Control and Prevention (CDC) in Atlanta delineated criteria for "AIDS-indicator" diseases.[55] A diagnosis of AIDS based on these indicator conditions implies the presence of one or more "sub-diagnoses" which include tumors, infections, and neurologic or gastrointestinal disease. Although many of these AIDS-defining diseases are quite different from one another, they share the characteristic of being severe clinical conditions that are ultimately caused by HIV. Some of these AIDS manifestations will be discussed in more detail below.

The term AIDS-related complex (ARC) has been used to refer to persons whose HIV-related symptoms were nonspecific and did not meet the criteria for an AIDS diagnosis (e.g., diarrhea, fever, fatigue, sweats, weight loss).[56] Although this AIDS-ARC distinction provided some reference point for stratifying HIV-infected individuals, it failed to account for the fact that patients with ARC could be quite ill or even die without an AIDS diagnosis, while some individuals with AIDS, such as those with Kaposi's sarcoma alone, can live for many years with only minimal symptoms. For this reason, the term ARC has fallen out of use, and the term "HIV disease" can be used to describe all persons with symptoms relating to HIV infection. "AIDS" continues to refer only to those persons whose manifestations meet the CDC criteria for an AIDS diagnosis.

Figure 13 summarizes numerous changes which have been made over time in the CDC surveillance definition of AIDS. In the earliest years of the epidemic, strict diagnostic criteria had to be met for AIDS-indicator diseases (e.g., *Pneumocystis carinii* pneumonia, toxoplasmosis, esophageal candidiasis). When HIV antibody testing became available in 1985, the CDC identified presumptive criteria for some clinical conditions which made it easier to establish an AIDS diagnosis in those who were HIV seropositive.[57] In 1987[58] and again in 1993,[59] several additional conditions were added to the list of AIDS-indicator diseases.

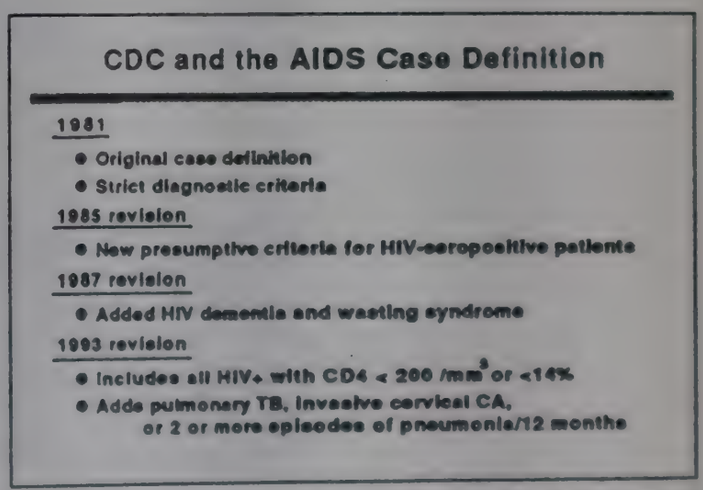

CDC and the AIDS Case Definition
1981
• Original case definition
• Strict diagnostic criteria
1985 revision
• New presumptive criteria for HIV-seropositive patients
1987 revision
• Added HIV dementia and wasting syndrome
1993 revision
• Includes all HIV+ with CD4 < 200 /mm³ or <14%
• Adds pulmonary TB, invasive cervical CA, or 2 or more episodes of pneumonia/12 months

Figure 13: A history of revisions in the CDC AIDS case definition.

The 1993 revision of the surveillance AIDS definition added pulmonary tuberculosis, invasive cervical cancer, and recurrent pneumonia to the list of AIDS indicator conditions. Since the 1993 revision, an AIDS diagnosis may also be made solely on the basis of severe immunodeficiency as evidenced by a CD4 count less than 200/mm^3 (or a CD4/total lymphocyte ratio less than 14%).[60]

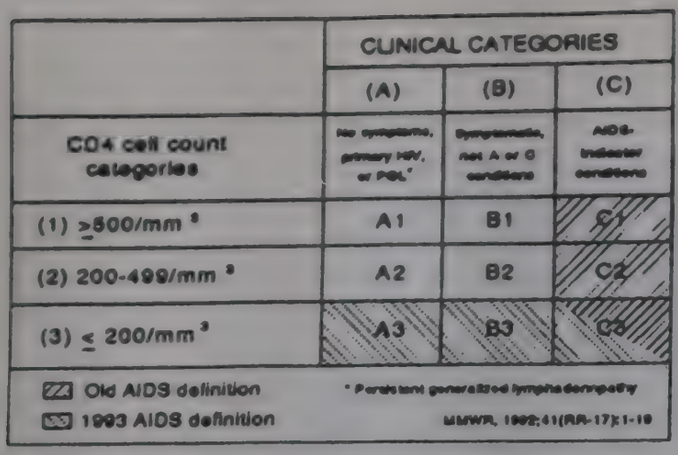


Figure # 14: 1993 HIV classification system

Figure 14 depicts the current unified system which relates the clinical classification for HIV infected persons with the surveillance definition of AIDS. All shaded boxes represent an AIDS diagnosis. The (C) column lists those individuals whose AIDS diagnosis is based on the presence of an AIDS-indicator condition, whereas those on the bottom horizontal row (A3-C3) are given an AIDS diagnosis on the basis of a CD4 count <200/mm^3 (or CD4% <14); patients in category C3 qualify under both criteria.

4: HIV Disease Manifestations

Although HIV has been named for its crippling of the human immune system, in fact it has multiple detrimental effects on the body and can lead to a wide spectrum of clinical manifestations. These include the presence of generalized or systemic symptoms (such as fevers, sweats, and weight loss); the development of tumors or infections; damage to the immune and nervous systems; and malfunction of the digestive tract. We will not review all these in detail, but will briefly look at some of the mechanisms by which HIV leads to these various secondary diseases.

Opportunistic Infections

Let's begin our survey of HIV's effects with the secondary infections[61] which result from the virus's damage to the immune system. These are among the most frequent, most life-threatening, and best understood effects of HIV.

As a result of the virus's depletion of helper cells, HIV-infected persons become prone to a wide variety of secondary infections. These infections in AIDS are somewhat unusual in that they are frequently caused by organisms which aren't normally dangerous, and in fact, which are present in many of us without causing disease. Only in the presence of immune suppression can they become pathologic. Because these usually benign organisms are taking advantage of immune suppression, they are called "opportunistic infections."

Opportunistic infections (OI's) fall into four categories: yeasts (or fungal organisms), protozoa, viruses and bacteria. We will briefly review a few of the more commonly encountered OI's.

Opportunistic Infections: Yeasts

The most common fungal infection in HIV-infected persons is caused by an overgrowth of *Candida albicans*, a yeast which is present in all of our gastrointestinal tracts. *Candida* can overgrow in the mouth and lead to a condition known as thrush (also called oral candidiasis). The white plaques of thrush may be present on the tongue, on the insides of the cheeks, and on the hard and soft palate. Thrush is not dangerous and usually is not painful, but if the plaques are bulky they may be painful or interfere with eating.

Candidal infections of the vagina may be the first clinical manifestation of HIV infection in women. Since recurrent or severe vaginal candidal infections may be a marker for HIV infection, their presence should prompt consideration for antibody testing for HIV.

In severely immune-suppressed persons, *Candida* can aggressively overgrow and even invade the muscular walls of the esophagus.

Esophageal candidiasis may cause symptoms of chest pain or burning, especially when trying to swallow food.

A second yeast which can cause severe infection in AIDS patients is known as *Cryptococcus neoformans*. This ubiquitous organism is present in soil, air, and pigeon droppings. In immune-suppressed persons the fungus may multiply in the fluid that bathes the brain and spinal cord and cause life-threatening meningitis (inflammation of the *meninges*, the membranes that surround the brain and spinal cord). Patients with cryptococcal meningitis may experience severe headaches, stiff neck, fever, and pain in the eyes when exposed to bright light. Treatment for cryptococcal meningitis in persons with AIDS must be continued for life.

Opportunistic Infections: Protozoa

Protozoa are single celled animals. One of the most frequent OI's in AIDS is a pneumonia (infection of the lungs) caused by a protozoan known as *Pneumocystis carinii*.[62] The *Pneumocystis* organism is present in up to 80% of adult Americans. Most of us have acquired it as children, but our healthy immune systems keep it in check and prevent it from causing active disease.

When one's immune system became disabled, however, *Pneumocystis carinii* can reactivate, particularly in the lungs. As many as 60 to 80% of persons diagnosed with AIDS will have at least one episode of *Pneumocystis carinii* pneumonia (also called "PCP") with a 15-25% mortality risk per episode. Although antibiotics are usually successful in suppressing this infection, the responsible organism is not permanently eradicated. Since treatment of the pneumonia focuses on *Pneumocystis* and does nothing to alter the underlying immune suppression which allowed *Pneumocystis* reactivation in the first place, after surviving a bout of pneumonia an individual may go on to develop other opportunistic infections or a recurrence of PCP.

Another protozoan which is commonly present in humans but which only causes disease in the presence of immune suppression is *Toxoplasma gondii*. Most of us have become infected by *Toxoplasma* from eating meat, or possibly from changing kitty litter (since cat droppings frequently carry this organism). In patients with AIDS, *Toxoplasma* reactivates and reproduces in the brain where it develops into abscesses. Symptoms which develop depend upon the part of the brain which is being compressed by the abscess, but can include paralysis, seizures, coma, blindness, or personality changes. There is fairly good treatment available to suppress the activity of *Toxoplasma*, but treatment must be maintained for life.

A third protozoan associated with disease in the presence of HIV infection is called *Cryptosporidium*. This organism can cause a relatively mild, self-limited diarrhea in travelers and in children attending day care. In these two settings, the illness usually terminates without treatment within a week to ten days. In patients with AIDS,

however, the organisms attach themselves to the absorptive surface of the small intestine and stimulate a high volume diarrhea that may result in the loss of 10 to 14 liters of diarrheal fluid per day. Unfortunately, no generally effective treatment for HIV-related cryptosporidial diarrhea is currently available, although the drug paromomycin may offer some benefit.[63]

Opportunistic Infections: Viruses

A number of viruses cause opportunistic infections in immune-suppressed patients. One of these, varicella zoster virus (VZV), is a member of the herpes family.

When a person is first infected with VZV, usually as a child, chickenpox (varicella) is the result. Although the acute viral illness subsides, the causative virus continues to reside in a dormant fashion in sensory nerves. In immune-suppressed patients (and even in some normal individuals) the virus can reactivate and grow out along these sensory nerves, causing pain and burning. This reactivation is called herpes zoster or shingles. Shingles usually follows the nerve in a very anatomic pattern, with the development of a painful and sometimes itchy rash in the area supplied by the nerve.

When shingles sores are in their "wet" stage, VZV can be transmitted to others almost as easily as during primary infection (chickenpox). Persons who have had chickenpox as children have no reason to be concerned about re-exposure as adults, but infants and pregnant women or other adults without a childhood history of chickenpox should avoid exposure to persons with shingles until all their skin sores have become crusted and dry.

Cytomegalovirus (CMV) is another frequently encountered opportunistic virus in AIDS. Like VZV, CMV is a member of the herpes family and is never eliminated after an initial infection. Approximately 30% of the U.S. population shows evidence of past CMV infection which has in many cases been acquired during sexual intercourse. Infection with CMV does not usually cause symptoms in healthy adults, but in persons who are immune-suppressed the virus can reactivate in the brain, lungs, adrenal glands, eye, and gastrointestinal tract. In the eye, inflammation of the retina (known as CMV retinitis) may lead to blindness in affected areas. While it is often possible to arrest the spread of retinal destruction with drugs such as ganciclovir or foscarnet, sight cannot usually be restored in an already-damaged area.

Opportunistic Infections: Bacteria

Patients with HIV infection may be predisposed to serious infections with certain bacterial species such as pneumococcus, staphylococcus, and hemophilus. Injection drug users are particularly prone to life-threatening pneumonia caused by these or similar organisms, and thus

recurrent bacterial pneumonias were added to the 1993 AIDS case definition.

Syphilis is a bacterial infection which may also behave in a more aggressive manner in persons who are HIV-infected, including relapse after treatment, rapid progression after infection, and failure to develop appropriate antibody responses indicating that syphilis infection has occurred.[54-66]

Mycobacteria include familiar organisms such as the causative agent of tuberculosis (M. tuberculosis) as well as its less familiar relative, *Mycobacterium avium* complex (MAC).

In healthy hosts, infection with M. tuberculosis is associated with a 10% lifetime risk of progressing to the disease we know as tuberculosis, or TB, but in most persons the infection remains walled off by the immune system and does not cause disease. However, HIV infection is the most potent known activator of latent tuberculous infection, and can lead to conversion to active disease in up to 8% of latently infected individuals each year.[67]

MAC is a slowly growing organism that rarely causes disease in healthy hosts. In those with compromised immune systems it may be associated with a disseminated infection which is associated with weight loss, fevers, and night sweats.

Summary of Opportunistic Infections

This has been a brief overview of some of the more common opportunistic infections which cause illness in persons immune-suppressed by HIV. The common denominator in all of these infections is destruction of CD4 helper cells, inhibiting the body's ability to activate a normal immune response. Organisms causing opportunistic organisms are frequently present in normal persons, but lead to disease only if one becomes immune-suppressed.

While we have discussed several of the most frequently encountered opportunistic infections, there are at least eighteen infectious agents which can be unusually aggressive in the presence of HIV; sixteen of these are capable of leading to a diagnosis of AIDS (see Figure 15).

HIV-Related Opportunistic Infections
(Asterisks [*] note potentially AIDS-defining conditions)

FUNGAL	*Candida albicans* (infection of mouth or esophagus*) *Cryptococcus neoformans** (meningitis) *Histoplasma capsulatum** *Coccidioides immitis**
PROTOZOAL	*Pneumocystis carinii* * (pneumonia) *Toxoplasma gondii* * (brain infection) *Cryptosporidium** (diarrhea) *Isospora belli* * (diarrhea)
BACTERIAL / MYCOBACTERIAL	*Mycobacterium tuberculosis** *Mycobacterium avium intracellulare** *Salmonella**
VIRAL	Cytomegalovirus* (retinitis) Herpes simplex virus* (skin ulcers) Herpes varicella zoster virus (shingles) Epstein-Barr virus (hairy leukoplakia, lymphoma*) JC virus* (progressive multifocal leukoencephalopathy) Human papilloma virus (cancer of rectum or cervix*; genital warts) Human Herpesvirus 8 (Kaposi's sarcoma) Molluscum contagiosum.

Figure 15: HIV-related opportunistic infections.

Neurologic Disease

A wide variety of neurologic complications which are independent of immune suppression have also been described in HIV-infected patients. As with helper cell destruction, neurologic disease is mediated by HIV's ability to enter cells which bear a CD4 receptor. In this case, the cell is not a helper cell but another white cell called a macrophage (see Figure 16). Because it bears a CD4 receptor, the macrophage is capable of becoming HIV-infected.

By itself, HIV is not able to cross the "blood-brain barrier" - a biological fence which protects the brain and spinal cord, and which defines the area known as the central nervous system (CNS). However, an HIV-infected macrophage can give HIV access to the CNS by acting as a "biological Trojan horse" (see Figure 16). Since macrophages are able to cross through tiny pores in capillaries in order to respond to local infections, an HIV-infected macrophage can also cross the blood brain barrier and bring HIV inside.

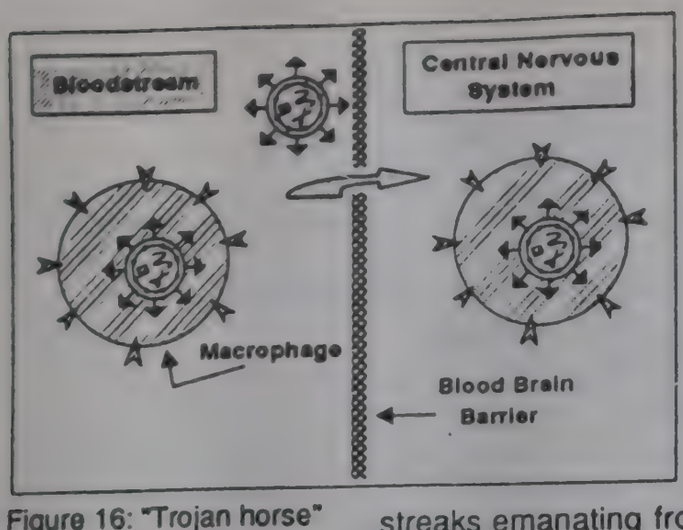


Figure 16: "Trojan horse" infection of central nervous system by HIV-infected macrophages.

Once inside the central nervous system, damage is not caused by HIV infection of nerve cells. Rather, it appears to result when nerve cells are caught in the "cross fire" of the immune system's attempts to destroy HIV-infected macrophages (see Figure 17).

Antibodies produced by the body against HIV-infected macrophages may indirectly cause nerve damage by an "innocent bystander" mechanism - possibly by release of toxic substances from the destroyed macrophages (graphically represented in Figure 17 as streaks emanating from the macrophage). It has also been postulated that "free" gp120 proteins released by the virus may mediate nerve damage, either by interfering with the function of a hormone known as vasoactive intestinal peptide (VIP) which keeps nerves healthy, or by interfering with the balance of calcium ions across nerve cell membranes.

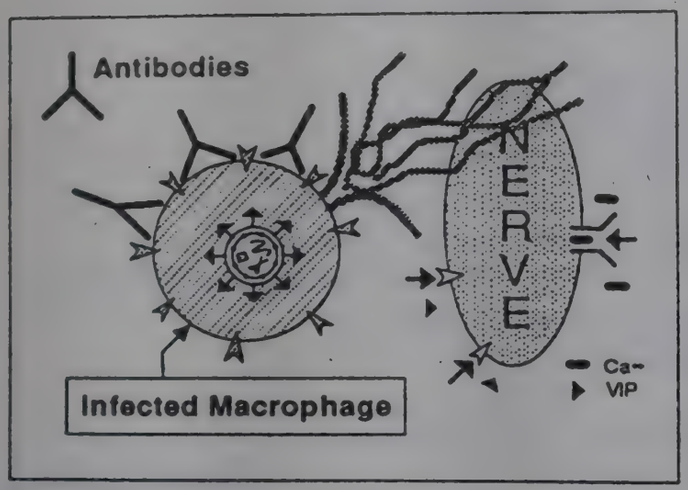


Figure 17: Innocent bystander destruction of nerve cells.

When neurologic deterioration occurs by these mechanisms in the brain, the areas most prominently affected include the cortex and subcortex - those regions responsible for some of our higher functions. Damage here tends to be global rather than focal, and leads to a condition known as AIDS dementia (also referred to as AIDS encephalopathy). This results from a diffuse dysfunction of cortical and subcortical tissues and may be manifested in a variety of ways:

Problems in thinking include a general slowing of thought processes and an inability to concentrate. Affected persons may lose their train of thought in mid-sentence or their place while reading. Short term memory is particularly reduced, although the capacity to recognize even old friends or members of one's family can also be severely impaired. Because information processing in general is slowed down, an individual may be quite slow in responding to a question. Another characteristic of AIDS dementia is *confabulation*: the tendency to answer questions to which the answer is not known with a made-up response rather than by replying, "I don't know."

Behavior can be subtly and gradually impaired, and is usually characterized by a gradual and apathetic withdrawal from both personal and professional relationships. Those with AIDS dementia may appear and act very much older than their actual age and can resemble persons with Parkinson's disease or Alzheimer's.

Effects on the motor system often manifest as a loss of coordination. This can be as subtle as a change in handwriting, or become more obvious in slurring of speech or loss of coordination in walking. Moto

dysfunction may progress to a rigidity in body posturing, and to the loss of bladder and bowel control.

The spinal cord can also be harmed by innocent bystander destruction, resulting in damage to nerves whose cell bodies are located in the spinal cord itself. Such destruction (called HIV myelopathy) can manifest as weakness, paralysis, spasticity (rigidity), or loss of bladder or bowel control.

HIV can also affect individual nerves after they exit the spinal cord in a condition known as peripheral neuropathy. This most commonly manifests as extremities which have become weak or exquisitely painful to even minor stimulation.

Most patients with a diagnosis of AIDS have some neurologic dysfunction, and in some individuals nervous system disease may be the only manifestation of HIV infection - even before immunologic aberrations are seen. Although AIDS dementia is now a CDC-defined AIDS diagnosis, this was not always so; some individuals died of dementia before 1987 without being counted as AIDS cases.

Slim Disease: The AIDS Wasting Syndrome

Besides the possibility of allowing opportunistic organisms to invade the gastrointestinal (GI) tract, HIV can also induce GI tract dysfunction in such a way as to directly contribute to malnutrition and diarrhea. In the small intestine, this can include anatomical changes in the structures which absorb food (the villi), as well as loss of specific enzymes critical for complete food absorption.

Loss of the capacity to absorb food leads to a chronic, malabsorptive diarrhea that has been referred to as *slim disease* - named as such in Africa because it makes people skinny. This is also known as the AIDS wasting syndrome, and like AIDS dementia, has been included as an AIDS defining diagnosis only since 1987.[68,69]

Kaposi's Sarcoma

Kaposi's sarcoma, also known as "KS," is a tumor of the cells which line blood and lymphatic vessels. KS is now known to be caused by a newly described virus known as Human Herpesvirus 8 (HHV-8), a distant cousin of the Herpes Simplex and Epstein Barr viruses.[70-72] Kaposi's sarcoma tumors can have many appearances and be found on any part of the skin or in the internal organs. KS can be seen in the mouth where it may grow rapidly on the hard palate or on the gums. It may also be found on external tissues of the eye, or on the mucous membranes which line the eyelid. KS also has a propensity to grow on the tip of the nose, sometimes with severe psychological consequences.

While KS of the skin is not usually dangerous in itself, KS of the GI tract or lung can frequently become life-threatening.

Cervical and Anal Cancer

Human papilloma-virus (HPV) is a sexually transmitted human virus which causes ano-genital warts (condyloma acuminata) and appears to be a strong cofactor in the development of both cervical carcinoma and anal squamous cell carcinoma. Numerous studies have demonstrated that women coinfected with both HIV and HPV have a higher incidence of cervical dysplasia and cervical cancer than those with HPV alone; if cervical cancer develops, it may have a more aggressive course than in non HIV-infected women.[73]

HPV infection which can be acquired during receptive anal intercourse can also be associated with the development of squamous carcinoma of the anus.

Lymphoma

Another group of cancers seen with increased frequency in the context of HIV infection are the solid tumors known as lymphomas which originate from white blood cells. In many cases these lymphomas may be related to simultaneous infection with Epstein-Barr virus (EBV). Many lymphomas with their initial site outside the central nervous system can be treated fairly effectively, while those which originate in the brain or spinal cord have a poorer prognosis.

Conclusion: HIV Clinical Manifestations

We have seen that HIV infection can result in a variety of disease manifestations which arise by quite different mechanisms. Helper cells can be destroyed by CD4 receptor-mediated HIV infection resulting in immune suppression and subsequent development of opportunistic infections. CD4 receptors are also involved (via CD4-bearing macrophages) in neurologic disease, but neurologic damage is not necessarily related to helper cell destruction. In the gastrointestinal system, a variety of abnormalities can lead to malabsorption and the development of the wasting syndrome. And finally, tumors such as Kaposi's sarcoma or lymphoma may be associated with HIV infection.

5: The HIV Antibody Test

Although antibodies produced by the immune system in response to HIV infection do not ultimately protect against the development of HIV disease, they do serve as an indirect marker that someone has been HIV-infected. The antibody test is considered *indirect* because it measures antibodies produced by the body in reaction to the virus, but does not detect the virus itself.

The blood test to detect antibodies produced by the human immune system in response to HIV infection was licensed by the Food and Drug Administration in 1985 primarily as a tool to screen the blood supply; it is also used in clinical settings to detect HIV infection for the sake of diagnosis and treatment. (Antibody tests based on an oral swab have also been licensed, but this discussion will focus on the procedures for testing by blood samples.)

Antibody Testing: A Two Step Procedure

Testing for HIV antibodies actually involves two steps: an initial screening test, followed by a more specific confirmatory assay for samples that are repeatedly positive on the initial screening. The first test, known as an ELISA (**E**nzyme-**L**inked **I**mmuno**S**orbent **A**ssay), functions very much like a pregnancy test in that the development of a color change after exposing serum to chemical agents signifies a positive result. In the ELISA, blood from the individual is placed in shallow wells lined with beads coated with HIV proteins. If antibodies against HIV are present, they will stick to the beads. After rinsing off excess blood, a second chemical is then added which produces a color change in the presence of human antibodies.

In order to be overly cautious in protecting the transfusion supply from the faintest possibility of HIV contamination, the ELISA test is intentionally designed to be "over-sensitive." That is, it errs on the side of caution, indicating a positive reaction when any hint of antibodies against HIV are present. However, in some individuals, antibodies structurally similar to those against HIV but which have actually developed in response to other disease processes or infections may also bind to the ELISA beads. This causes a *false-positive* result: a positive test in the absence of true HIV infection.

Because of this deliberate over-sensitivity, an ELISA alone is insufficient to determine if an individual is truly infected with HIV. If a given blood specimen is ELISA positive, it will be tested again by ELISA. Specimens that are repeatedly positive on ELISA are then subjected to a second, more specific confirmatory test to determine which ELISA-positive specimens are truly indicative of HIV infection.

In the U.S., the confirmatory test is usually a Western Blot (WB) assay. In the WB, HIV proteins are placed on filter paper which is then subjected to a strong electric current. Because proteins are charged

particles, they will migrate in the current at a speed proportional to their size, ranging from largest to smallest. Next, blood from the person being tested for HIV is placed on the paper. If the individual's immune system has made antibodies directed against viral proteins, they will adhere to the paper at the location of their target protein. In a final step, markers are added that detect the presence of human antibodies, displaying a characteristic "fingerprint" of HIV in persons who have been infected.

While the WB is sometimes assumed to be the "gold standard" to indicate HIV infection, in fact there is no universally agreed upon "fingerprint" pattern used among laboratories to define a positive result.[74] In addition, as with the ELISA test, antibodies not caused by HIV but which produce a fingerprint similar to that seen in HIV can also lead to false positive results, although with a much lower incidence when compared with the ELISA.

In the context of donating blood for transfusion, blood that is only ELISA positive will always be rejected. However, blood donors (or individuals requesting an HIV antibody test in any other circumstance) will be notified that they are HIV positive *only* if both ELISA and WB are positive.

(Occasionally, a Western-Blot test returns with an "indeterminate" result. While this can represent recent HIV infection and a still-evolving antibody fingerprint, it most often does not. Individuals with indeterminate tests are usually asked to repeat their tests again in 3 - 6 months; if there is no change in the pattern, it is very unlikely that HIV infection is the cause of the antibodies that are seen.[75,76])

The Accuracy of Antibody Testing

What is the accuracy of combined testing (ELISA, then WB) for HIV antibodies? As with any medical test that is not 100% accurate, the answer depends upon the prevalence of the screened-for condition in the population being tested (Bayes' theorem).[77] For example, the correlation between an abnormal cardiac treadmill test result and the presence of true coronary artery disease will depend upon the sex and age of the person being tested, simply because the incidence of cardiac disease varies with gender and age.

Similarly, in the context of HIV antibody testing, the accuracy (or predictive power) of the test result depends upon the risk for HIV infection in the individual being tested. A positive test in someone with a high-risk history has a low chance of being falsely positive. On the other hand, a negative test in someone with a high risk history has an appreciable chance of being falsely negative. (In one study, 2 of 37 men with high risk histories for HIV exposure had negative antibody tests, but HIV could be grown from their blood.[78])

Conversely, a positive test result in someone with a low risk of having been exposed to HIV has a significant chance of being false-positive. For example, in an evaluation of the accuracy of its HIV testing among recruits, the U.S. military performed ELISA and WB tests on 135,187 recruits, then did multiple confirmatory tests on positive samples. In this group of recruits (at low risk for HIV by self-selection, since HIV-infected recruits are turned away), 15 were HIV positive by both ELISA and Western blot. When additional confirmatory tests (such as viral culture and other more sophisticated research-level assays) were done, one of the fifteen positive tests was a false positive. Thus, in this low-risk group, the chance of a positive test result being falsely positive was 1/15, or 6.7%.[79]

The HIV antibody test does not measure whether disease is currently being caused by HIV, nor can it predict whether an individual will ever develop HIV-related symptoms. The test cannot determine how long an individual has been infected; it simply provides a "likely" or "unlikely" answer to the question of whether viral infection has occurred.

Rarely, individuals who have had a positive antibody test may stop producing antibodies after a prolonged exposure to the virus; they *serorevert* to being antibody negative. However, tests that detect HIV DNA in these persons show that even though antibodies are absent, the virus's genetic information is still present as a provirus.[80]

Those who have been infected with HIV but who have not yet become seropositive are in the "window" between infection and seroconversion. If they were to donate blood, their negative antibody test result would allow their infected status to go undetected. The window period - and its impact on bloodbanking - will be further discussed in Chapter 6 on transmission.

Since a negative test in someone with a history of high risk activity could be falsely negative, it should never be interpreted as absolute proof of one's inability to transmit the virus, nor as a justification for engaging in irresponsible sexual or needle-sharing activity.

Other Considerations in Antibody Testing

Receiving a positive test result can have devastating personal and social effects even in the absence of symptoms. A positive test may negatively impact one's eligibility for life insurance, health insurance, employability or housing. Some otherwise well individuals have become severely incapacitated by worrying about developing AIDS after receiving the news that they are seropositive. Several dozen suicides have been reported in persons who became profoundly depressed at receiving the news of a positive test, even in the absence of symptoms.[81-84]

Because of these potentially serious outcomes to HIV testing, many states have enacted laws placing considerable responsibility upon

those who would perform antibody tests, including an obligation to do effective pre- and post- test counselling. These considerations make it clear that being tested for the presence of HIV should never be taken lightly, and should only occur after an individual has considered all the possible ramifications of discovering that he or she has been infected.

6: Transmission of HIV

Although certain groups have been identified as having an increased risk of exposure to HIV - including hemophiliacs, individuals who have received blood or blood products between 1978 and 1985, men who have sex with men, those who use intravenous drugs, sexual partners of HIV-infected persons, immigrants from certain central African countries, and children of infected mothers - the virus can infect anyone who engages in high risk activity. Although the above named groups have a relatively high incidence of HIV infection, the critical factor is not the group to which one belongs, but the behavior in which one engages. Thus it is more accurate to speak of "high risk activity" than of "high risk groups." *All* individuals need to avoid high risk activity.

Modes of HIV Transmission

Although there has been an explosion in our knowledge of HIV since its presence was first suggested in 1981, the modes by which the virus is known to be transmitted have remained stable. While we now understand in more detail the means by which transmission occurs by each of these five routes, there have been no new avenues of transmission documented. The five modes of transmission (outside the health care setting) are: 1) from high-risk sexual contact; 2) from sharing needles; 3) from an infected mother to a developing fetus; 4) from breast-feeding; 5) from contaminated blood products. The first two of these (sexual intercourse and needle sharing) are the only ones likely to affect the non-health care worker adult.

HIV Present in Certain Body Fluids

Like hepatitis B, HIV is present in many bodily fluids. However, some fluids (such as sweat) contain no virus,[85] while others (saliva, tears, and urine) contain viral concentrations so low that they have never been documented to result in HIV infection. Only those fluids which have a high concentration of the virus have been implicated in HIV transmission, including semen and seminal fluid, blood or bloody fluids, and cervical and vaginal secretions (see Figure 18). It is especially important to recognize the infectiousness of seminal fluid, since this may be released from the penis during sexual foreplay and before orgasm, and has been noted to have as many as 10^8 free virus particles per ml.[86]

HIV Concentration	
Low	High
Tears	Blood, Bloody Fluids
Saliva	Sperm & Seminal Fluid
Urine	Cervical Secretions

Figure 18: Concentration of HIV in various body fluids.

In order for physical contact to be a source of viral infection, a high concentration fluid must gain access to the potential recipient's bloodstream. Such contact can occur during sexual activity, during needle sharing, or by bringing these fluids into contact with an open

wound, with abraded skin, or with mucous membranes (for example genital or oral tissues).

Sexual Transmission

The relative efficiency with which various forms of sexual contact can transmit HIV exist along a continuum, with activities known to be very unsafe at one end, and those known to be quite safe at the other (see Figure 19). Both insertive and receptive partners engaging in anal or vaginal intercourse are at risk for acquiring HIV infection, with receptive anal intercourse carrying the highest risk.

Although it may be easier for the virus to pass from a man to a woman during any single act of intercourse, this difference appears to become less significant over time. Indeed, the female-to-male ratio is nearly 1:1 in Africa, a country where heterosexual transmission predominates. It is difficult to quantitate the risk of being infected during vaginal or rectal intercourse, since transmission has been known to occur following one sexual act, and also has not occurred despite scores of exposures.

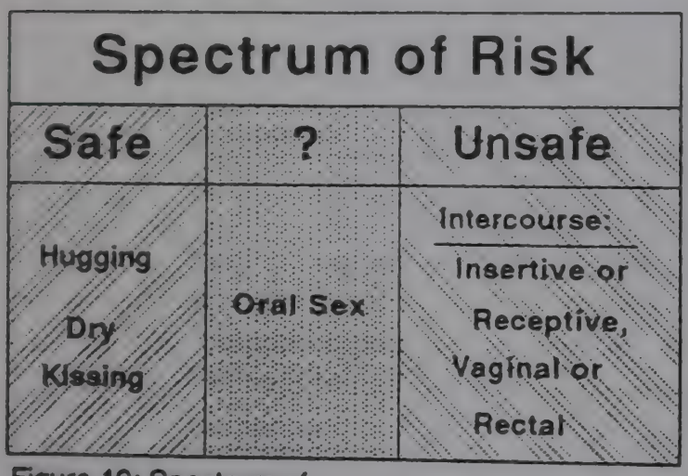


Figure 19: Spectrum of risk for acquiring HIV infection during different types of sexual contact.

Oral-genital sex (oral-vaginal or oral-penile contact) appears to be less risky than genital intercourse, but cases have been documented in which oral-genital sexual activity appears to have been the only known means of HIV exposure.[87-92] HIV could also theoretically cross mucous membranes of the mouth or gain access to the bloodstream via microscopic oral trauma during vigorous and prolonged "french" kissing.

Physical contact in which there is no possibility for exchange of concentrated fluids (for example, during hugging or dry kissing) carries no risk of acquiring HIV.

Factors Increasing the Risk of Sexual Transmission

Because the presence of genital ulceration or inflammation can make access to the bloodstream easier during intercourse, any sexually transmitted disease (STD) that causes ulcers or inflammation can increase the risk for becoming infected by, or for transmitting, HIV. Such infections include syphilis, chancroid, gonorrhea, herpes, and chlamydia.

The use of drugs or alcohol may also increase the risk of acquiring HIV during a sexual encounter because of the lowering of inhibitions and subsequent poor decisionmaking that may result. Under the influence of these substances, individuals may choose to engage in high risk behaviors that they would not consider under more sober circumstances. The recent epidemic of inhalable "crack" cocaine represents an especially worrisome risk for increasing HIV transmission, since the drug itself increases sexual appetite, and

sexual favors are frequently used among crack users as currency to obtain further drug.[93,94]

At least in Africa, being uncircumcised also appears to increase the risk of becoming infected with HIV during sexual intercourse.[95-97] One study in the U.S. has confirmed such an association.[98]

Reducing HIV Transmission During Sexual Activity

There is no foolproof means for preventing sexual transmission of HIV apart from the avoidance of those activities which potentially expose oneself or one's partner to highly concentrated fluids. For those who choose to engage in high risk behaviors, the routine use of latex condoms can decrease the risk of acquiring HIV.

There is no doubt that a number of factors can contribute to the failure rate of condoms, including improper timing in their use or improper technique in their application. In addition, latex condoms can be dissolved when used in conjunction with petroleum-based lubricants (such as mineral oil, vaseline, shortening), and can also leak because of manufacturing defects or secondary to mechanical rupture. Due to these multiple potential sources of error, the pregnancy rate for condoms has often been quoted as quite high, often in the neighborhood of 10-15%.[99] However, these statistics may represent the intermittent employment of condoms by inexperienced users. Studies with couples who use condoms correctly all of the time have reported pregnancy rates as low as 2%.[100] More recent data from three studies evaluating the use of condoms to prevent HIV transmission from one infected member of a stable sexual relationship to the individual's uninfected partner suggest that consistent and correct use of latex condoms can significantly reduce the risk of acquiring HIV in this situation.

One observational study followed 245 HIV-discordant heterosexual couples (in which one member is HIV-infected and the other is not) for a median of 22 months; in all, the only risk for the uninfected member to become HIV-infected was intercourse with his or her infected partner. At the end of the study period, approximately half of the group reported using condoms 100% of the time, while the other half had used them intermittently. As compared with 12 documented infections in the group using condoms intermittently, no infections were observed among those who used them consistently despite an estimated 15,000 episodes of intercourse.[101] In another study of 282 Greek prostitutes, no infections occurred over an observation period of two years among a group which had increased its use of condoms from 66% to 97% of the time. This change was also accompanied by a decrease in the frequency of syphilis from 17% to 3%, and in gonococcal infection from 14% to 0%.[102] A third study compared transmission rates from infected hemophiliacs to their sexual partners. Among 31 couples, 14 couples always used condoms, while 17 used them occasionally or not at all. Over an observation period of two years, there were 3 seroconversions

in the intermittent use group (a 17% transmission rate), compared with no infections in the consistent use group.[103]

Despite the absence of HIV transmission documented in these three studies, it must be emphasized that condoms cannot be taken as an absolute guarantee against infection during intercourse. Condoms cannot make unsafe sex safe; they only make it less unsafe. However, for those individuals who choose to engage in high risk activities, condoms can reduce the risk.

Nonoxynol-9 is a spermicidal agent which has also been shown capable of inactivating HIV in the laboratory. For this reason, it has been recommended for use with condoms to decrease the risk of HIV transmission should mechanical failure occur. However, nonoxynol 9's simultaneous capacity to cause tissue inflammation could theoretically increase the chance that HIV could be transmitted across an irritated membrane, allowing transmission before inactivation occurred.[104] In addition, at least one study suggests that the use of nonoxynol-9-coated condoms and increase the incidence of urinary tract infections in young women.[105] Because of these potentially detrimental effects of nonoxynol-9, more research is needed before advice regarding its appropriate use can be given with certainty.

Sharing Needles

Sharing HIV-contaminated needles can be a very efficient means of transmitting the virus. During intravenous drug use, a quantity of blood is usually drawn back into the syringe to insure that the needle is in a vein before any drug is injected. If this needle and syringe are immediately used by another party, a microscopic transfusion of residual blood then occurs.

Sharing a "cooker" in which dry material such as heroine powder is brought into solution for injection may also be a means of transmitting the virus between users. Education to encourage the use of clean needles or the cleaning of "works" with bleach must also inform users of the risks of sharing contaminated cookers. If bleach is used to disinfect drug paraphernalia (in contrast to its use to clean environmental surfaces, as discussed below), it must be used at full strength and be in contact with contaminated surfaces for at least 30 seconds. Alternatively, injection equipment can be boiled for 15 minutes to inactivate HIV.[106]

Although one may think of intravenous use of heroine or cocaine by inner city populations when "needle sharing" comes to mind, there are other groups who are also at risk of HIV transmission by this means. These include college or high school students who experiment with intravenous drugs, "white collar" workers who inject cocaine or heroine, high school and college athletes who share needles while injecting

anabolic steroids, and those who get tattoos or acupuncture with nonsterile equipment.[107]

Perinatal Infection

HIV infection has been observed to pass from an infected mother to her developing fetus in 25 to 45% of cases (with higher percentages seen in developing countries and lower numbers in the industrialized world). While it has been thought for several years that the majority of these infections occurred antepartum (during fetal development), data is now accumulating which suggests that up to 65% of these infections may occur during the birth process itself. Factors that may predispose to transmission of HIV include seroconversion during pregnancy, a decreased maternal CD4 cell count (<200), or a high level of virus in the mother's bloodstream.[108,50]

HIV also appears (apparently because of the infant's more immature digestive and immune systems) to be capable of being orally transmitted to a neonate during breast feeding. Several such cases have been documented in mothers who were HIV negative at birth but who were given transfusions after delivery with blood that turned out to be HIV-infected, and who subsequently passed the virus on during breastfeeding.[109] One study has shown that seroconversion in mothers who are breastfeeding can be accompanied by HIV infection in their infants up to 36% of the time.[110] HIV has also been documented to pass from breastfeeding infants (who were infected by contaminated transfusions) to their mothers whose inflamed nipples provided a means for the virus to infect them.[111]

AZT to Prevent Perinatal Transmission

One of the most important studies regarding HIV transmission has documented that AZT can significantly reduce the chance that an infected mother will pass the virus to her infant before or during birth. The study involved 364 women with CD4 counts >200 who were randomized to receive either placebo or AZT. The treatment group received oral AZT beginning at the 14th week of pregnancy and intravenous AZT from the onset of labor until delivery. Infants in the treatment group received oral AZT from a few hours after birth until 6 weeks of age. In the placebo group the transmission rate was 25.5%, but in the treatment group only 8.3%, a reduction of 62%.[112]

This study indicates that AZT can play a major role in reducing the HIV epidemic among children, but it must also be recognized that AZT is not generally available in developing countries. Although children currently account for approximately 2 percent of AIDS cases in the U.S., they constitute 5 to 25 percent of the HIV-infected population in developing countries.[113]

Blood Products

Although blood and blood products (such as clotting factors) account for up to 2% of adult and up to 6% of pediatric AIDS diagnoses in the U.S., the blood supply has been quite effectively screened since the HIV antibody test was routinely introduced into bloodbanking practices in the spring of 1985. However, as was noted earlier, a positive antibody test may take several weeks or months to develop, or rarely may never develop. In order to reduce the chance that someone could give blood during the "window period" (when an individual is antibody negative but HIV-infected), persons who have had a risk of exposure to HIV are asked to voluntarily defer from blood, organ, or sperm donations no matter their HIV antibody status. These include men who have had sex with other men since 1977, hemophiliacs, anyone with prostitute contact within the past six months, persons who use (or have used) intravenous drugs or who have IV drug-using sexual partners, and persons from specified endemic countries.[114,115] By using both antibody testing and voluntary deferral, the risk of an HIV-infected blood unit is now extremely low - between one in 40,000 and one in 250,000 units of blood.[116,117]

It should also be noted that many persons mistakenly believe that they might get infected with HIV while *donating* blood. This could never happen, since new needles and equipment are always used during blood donation. In fact, because of voluntary deferral and because AIDS diseases and treatments have increased the demand for blood transfusions, there is more need than ever for qualified blood donors.

No Casual Transmission

Although there is clearly a risk of acquiring HIV during high risk sexual activity or needle sharing, there have now been a number of studies documenting the fact that HIV is *not* casually transmitted, and that there is no risk of becoming infected when engaging in normal day-to-day activities. More than 1,000 years of contact between patients with AIDS and their family members have been studied by researchers (several hundred individuals studied for a few years each), during which a great deal of intimate but nonsexual contact occurred. This included dry kissing on the cheeks and lips; sleeping together; sharing linens, toothbrushes and razors; sharing kitchens and bathrooms; and sharing food cooking and serving utensils and facilities. During these years of observed contact, no cases of transmission to someone who was not a sexual partner were documented.[118-123] (Although the studies failed to demonstrate HIV transmission from razors and toothbrushes, since these instruments routinely come into contact with minute quantities of blood they should not be shared.)

Two reports of so-called "household transmission" have again raised the question of casual transmission of HIV. However, in both these cases traditional modes of transmission appear to have been involved. In one, an adolescent with hemophilia appears to have transmitted HIV

to his brother during razor-sharing or possibly during unrecognized contact with blood or contaminated needles.[124] In the second, HIV infection appears to have been transmitted from two infected individuals through contact with blood or other body secretions.[125]

Taken together these data point out that one can become infected with HIV only by consciously making a decision to engage in high risk, intimate activity such as sexual intercourse or shared drug use. There is no risk of acquiring the virus from living together, from being in the same workplace, from coughing or sneezing, from shaking hands or using public toilets, or from nonsexual physical contact. Neither is there evidence to support the suggestion that mosquitoes or other insects could transmit HIV between human beings.

Because of these facts, the CDC places no restrictions on the activity of HIV-infected students or employees including food handlers, beauticians, cosmetologists, or teachers, with the sole exception that persons with wet sores need to be appropriately restricted if such sores cannot be adequately bandaged. Preschool children (who are at risk of acquiring routine childhood infections from their peers), children with uncontrolled biting behavior, and those with bloody diarrhea need to be educated in special circumstances.

Inactivating HIV

If one becomes exposed to a potentially infectious body flood - for example, while caring for a child with a bloody nose - the fluid should be presumed to be capable of transmitting HIV no matter the individual from whom the fluid has come. Routine precautions should always be used to clean up any such spills.

Since the virus is inactivated by soap and household bleach, a good routine is to clean an affected area with soap or a commercial disinfectant, and then to rinse again with a 10% solution of bleach.

Unlike its response to soap, bleach, and heat, HIV is not easily inactivated by cold or drying. The virus can survive in solution at room temperature for up to two weeks, and three to seven days are required for dried virus to become nonviable when reconstituted in a liquid medium and subjected to proper growing conditions.[126] This does not mean that dried blood presents an immediate risk, however, since it would have to be reconstituted in liquid *and* given access to the bloodstream before it could cause infection.

Risk to Health Care Workers

Even among health care workers who have had unusual exposure to HIV (for example, by accidental infected needle injuries), the incidence of transmission is very low (approximately 0.35% per exposure).[127] This is considerably less than the 15-30% expected for hepatitis B transmission under similar circumstances. News reports in May, 1987,

of "casual" transmission among health care workers were of cases in which mucous membranes or abraded skin were exposed to fresh blood, and did *not* represent new modes of viral transmission.[128]

Health care workers are protected from HIV infection not by knowing the antibody status of a patient (since this can change, be unavailable, or be falsely negative), but by utilizing "Universal Precautions." These presume that all patients are potentially infected, and mandate the use of barrier protections with all presumptively infected fluids.[129]

Although the risk to health care workers is small, it is real. Through December, 1993, the Centers for Disease Control has reported 40 documented and 83 possible occupationally-acquired HIV infections in the U.S.[130] (In documented cases, both pre- and post-exposure blood tests confirm seroconversion; in possible cases, pre-exposure blood tests are not available.) In comparison, thousands of infections with hepatitis B virus occur annually in this population, and two to three hundred deaths from hepatitis B complications occur in the U.S. each year among health care workers who have contracted the virus from occupational exposure. Precautions that prevent infection with hepatitis B virus also prevent infection with HIV.

Risk Posed by HIV-Infected Health Care Workers

Publicity surrounding the probable transmission of HIV infection from a Florida dentist to six patients has raised serious questions about the risk to patients posed by seropositive health care workers. This worry was heightened when the sixth case of infection reported from this dentist's practice had no invasive procedures performed (only teeth cleaning).

In an attempt to assess the actual risk to patients posed by infected health care workers, the CDC compiled information from health departments, hospitals, and other agencies who had notified patients who had been treated by infected health care workers and/or had patient HIV testing data.[131] As of December, 1992, HIV test results for 17,920 patients treated by 57 infected health care workers (other than the Florida dentist) were known. No seropositive persons were reported among 11,544 patients of 46 health care workers; 92 HIV-infected persons were identified among 5,606 persons of the remaining 11 health care workers (6 surgeon/obstetricians and 6 dentists). Follow-up has been completed for 89 of the 92 seropositive persons: 7 were infected before receiving care from the health care worker; 59 had other risk factors; many of the remaining 23 had other potential opportunities for exposure to HIV (e.g., exchanging sex for drugs). HIV nucleotide sequencing was performed for 27 patients treated by 3 health care workers; close genetic relatedness was not found. Preliminary information from the remaining 3 suggest that all had other risk factors. The conclusion from these studies is that the risk of HIV

transmission from an infected health care worker to a patient during an invasive procedure is exceedingly small.

However, despite these data showing that the risk of transmission from infected health care workers to patient is small, the Florida dentist's cases have generated strong calls for mandatory testing of health care workers, mandatory reporting of HIV status by health care workers to their patients, and limiting the practice of infected health care workers. The CDC initially called on professional associations (e.g., American Medical Association, American Dental Association) to establish a list of infection-prone procedures which would be restricted to seronegative health care workers. The professional associations responded that such lists were not meaningful, or were impossible to construct based on current scientific evidence.

At the present time, hospitals are advised to respond to each HIV-infected health care worker on a case-by-case basis, with each situation being evaluated by a board of peers and specialists who jointly make decisions regarding the individual's appropriate level of activity.[132]

7: Epidemiology of HIV

HIV Infections and AIDS Cases in the U.S.

As of June, 1996, the CDC had documented 548,102 AIDS cases in the U.S.[133], while 319,849 AIDS-related deaths had been reported by the end of 1995 (the most recent estimate).[134] It is estimated that each year from 1500 to 2000 newborns and 40-80,000 adults acquire HIV infection,[135] and that there are between 650,000 and 900,000 persons are currently living with HIV infection in the US.[136]

Although 1996 data indicate that the majority of adult AIDS cases are still attributable to men who have sex with men, this group represents a gradually diminishing proportion of the total number of AIDS cases. As seen in Figure 20, cumulative case reporting between 1987 and 1995 shows a gradual decrease in the number of new cases in which homosexual/bisexual behavior or intravenous drug use among gay/bisexual men was the means of HIV acquisition, with a gradual rise (from 16 to 26%) in the number of cases in whom HIV acquisition occurred among heterosexual IV drug users. When only those cases reported in 1995 are considered, 42% were among men who have sex with men, while 26% were among heterosexual injection drug users (IDU's).[133]

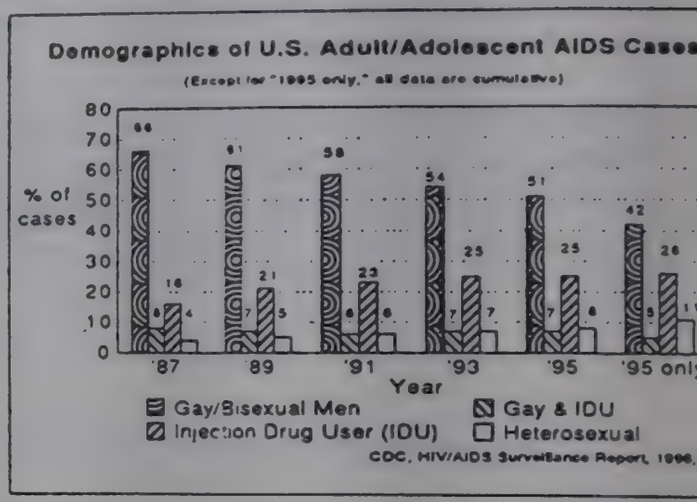


Figure 20: Breakdown
annual case reporting
recent yea

The national average of 25% of cumulative AIDS cases occurring among heterosexual IDU's represents a wide spectrum of regional variations, with cases in the west being relatively low (for instance, less than 10% in Los Angeles County), while New York, New Jersey, Massachusetts, Washington D.C. and Puerto Rico now report that IDU's represent the largest single group of new cases.

HIV Infections in Women

By the end of 1992, women accounted for 40% of adult HIV infections in the world.[137] However, the gender ratio (male-to-female) of adult HIV infections varies widely by geographic area, ranging from a high of 8.5 in North America to 1 in Sub-Saharan Africa.[138] In addition, the increase in infections among women in the last 10 years has been dramatic. From 1980 to 1991 the number of HIV-infected men increased approximately 90-fold, while the number in women increased more than 225-fold.[139]

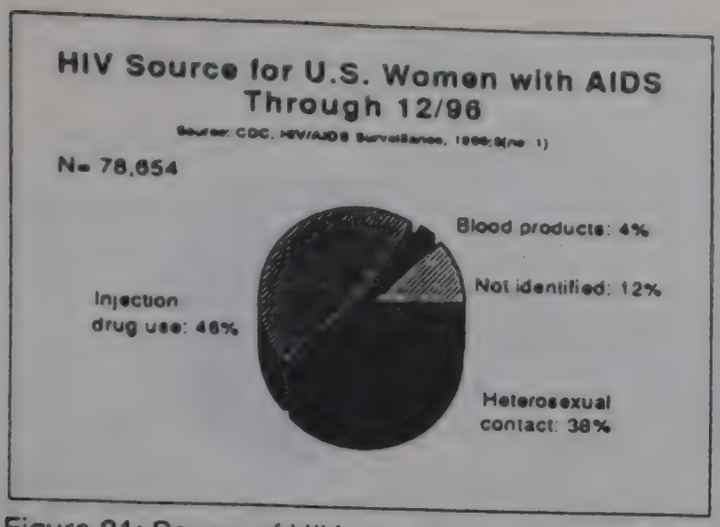

HIV Source for U.S. Women with AIDS Through 12/98
N= 78,654
Blood products: 4%
Not identified: 12%
Injection drug use: 46%
Heterosexual contact: 38%

Figure 21: Source of HIV infection for U.S. women with AIDS.

HIV-infected women are frequently younger than infected men, reflecting the fact that women are often younger than their sexual partners. Intercourse can pose special risks for acquisition of HIV to young women, as a more immature cervix does not have the same capacity to protect against STD's as it does in an older woman. For this reason, pre-pubescent or pubescing girls may acquire HIV infection or other STD's more easily than their older counterparts.[140]

As compared with 25% of all adult U.S. AIDS cases being attributed to IV drug use among heterosexuals and 8% to heterosexual contact, 46% of cases among women are due to IV drug use and 38% to heterosexual encounters (see Figure 21), half of which represent sexual contact with injection drug users. Women now account for 66% of all U.S. cases attributed to heterosexual transmission.[133]

Racial/Ethnic Distribution of U.S. AIDS Cases

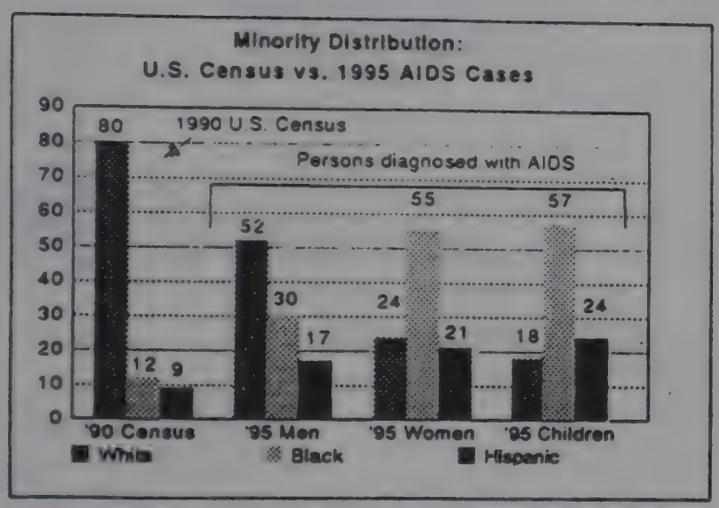


Figure 22: Comparing the racial/ethnic distribution of the U.S. population with U.S. AIDS cases.

The left set of columns in Figure 22 shows 1990 census data on the percentage distribution of whites, Hispanics, and blacks in the U.S.[141] In marked contrast, successive columns demonstrate the distribution of AIDS cases in the U.S. among men, women, and children (respectively) as of December, 1995.[133]

When looking at the figures for men one can begin to appreciate the disproportionate burden being borne by minority communities, but this is especially true among women and children with AIDS. While 12% of the U.S. population are African Americans, 55% of women with AIDS come from this community. Similarly, while Latinos make up 9% of the general population they represent 24% of AIDS cases among women. Since perinatal transmission from infected mothers to their developing or delivering babies accounts for 90% of transmission to newborns, the demographics of pediatric AIDS reflect the grossly disproportionate representation of minorities among women with AIDS.[133]

If one "looks back" at the source of HIV infection in women who have transmitted the virus to their infants, 54% of all pediatric cases are attributable to IV drug use in the mother or father (see Figure 23).[133]

Since the blood supply has been quite effectively screened for HIV antibodies since 1985, fewer cases of AIDS (among both adults and children) are being attributed to blood or blood products each year. Among children, 90% of all infections are now due to perinatal transmission.[133]

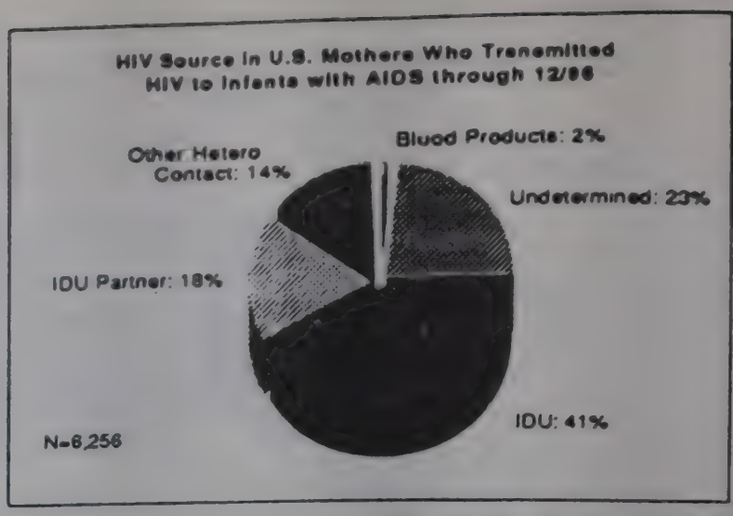

HIV Source in U.S. Mothers Who Transmitted HIV to Infants with AIDS through 12/96
Other Hetero Contact: 14%
Blood Products: 2%
Undetermined: 23%
IDU Partner: 18%
IDU: 41%
N=6,256

Figure 23: Source of HIV infection in U.S. mothers who have passed HIV to their children.

Impact of AIDS on Mortality

By 1994, AIDS had become the 3rd leading cause of death for women 25-44 (see Figure 24), and the leading cause of death for young men in this same age group (see Figure 25).[142]

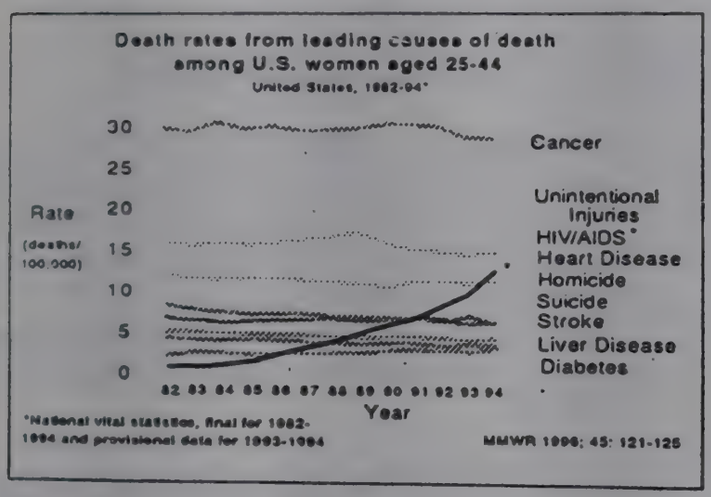


Figure 24: Impact of AIDS on mortality among young women in the U.S.

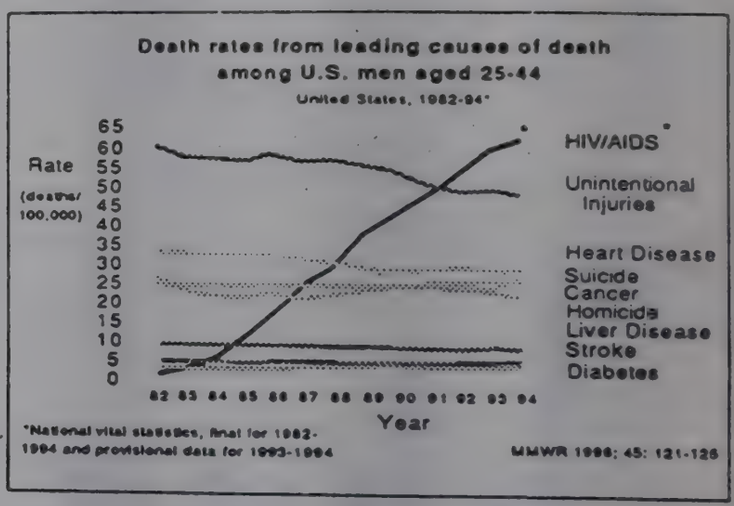


Figure 25: Impact of AIDS on mortality among young men in the U.S.

While women account for 14% of all cumulative U.S. adult AIDS cases through 6/96, they account for 27% of cases reported from 6/95 through 6/96.[133]

Adolescents and HIV Infection

Although adolescents represent only about 1% of all reported U.S. AIDS cases, they are one of the fastest growing segments of the epidemic. During the period 1983 to 1992 when the number of adult cases increased by a factor of 55, adolescent cases increased 100-fold.[143] The WHO now reports among newly infected adults, the majority are between 15 and 24 years of age.[144]

18% of U.S. AIDS cases have been reported among persons between the ages of 20 and 29.[133] Since the average incubation for HIV in this group is 10 or 11 years, many of those diagnosed in their twenties were

infected during adolescence. Studies of certain high risk populations (e.g., homeless youth in New York) in 1987 demonstrated that from 7 to 16% of these adolescents may be infected.[145] By the end of 1992 there were 3058 cases of AIDS in 13-21 year olds, a 100-fold increase from 30 cases in 1983 (compared with 55 fold increase in adult cases, from 2000 to 110,000 cases.)

These data, taken together with the observation that teenagers frequently feel "invulnerable" to risks that might harm others, bring a special sense of urgency to those who work with youth to provide effective education to minimize the risk of HIV transmission.

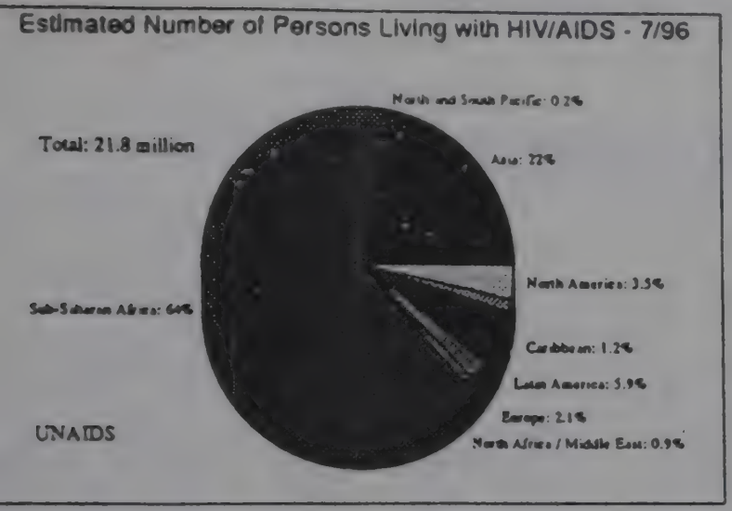


Figure 26: Global distribution of HIV infections.

Global HIV/AIDS Epidemiology

The WHO reports that each day 8,5000 new infections occur each day, 1,000 of them among children. A total of 28 million persons have been infected thus far, with some 21.8 million people still living (see Figure 26).

The disproportionate spread of the epidemic is striking when one looks at the global distribution of AIDS cases. Although Africa makes up less than 9% of the world's population, it has borne the burden of more than 60% of all reported AIDS cases. It is anticipated that within 25 years 70 million Africans will be infected - up to 16% of the continent's population - leaving some 16 million AIDS orphans.[146]

Although the epidemic has been spreading in Asia only since the middle 1980's, already it accounts for 1/5 of the world's infections, with 90% of these being concentrated in 4 countries. In Thailand, Myanmar (formerly Burma) and Cambodia. HIV infection rates meet or exceed 2%, and the 0.3% incidence observed in India accounts for 3 million infections in that country alone.[144]

By the year 2000 90% of all new AIDS cases will be reported from the developing world, with half in Africa, over a quarter in Asia, and more than 10% in Latin America. It is also estimated that by the end of the decade more new infections will be occurring in Asia than in Africa; 75% will be due to heterosexual transmission.

8: Treatment and Prevention

Antiretroviral Therapy

At the present time, two broad classes of drugs are available for treating HIV infection. The first group are *reverse transcriptase inhibitors*; these block the enzyme (HIV's reverse transcriptase) which translates HIV RNA chromosomal information into a DNA chromosome (see Chapter 1). The second group of drugs inhibit the cleavage of proteins by the HIV protease and thus are known as *protease inhibitors*.

Reverse Transcriptase Inhibitors

All these drugs prevent the process of reverse transcription, but two subgroups exist which differ somewhat in their method of inhibiting the enzyme.

Nucleoside Analogues

Nucleoside analogue reverse transcriptase inhibitors were the type of drugs to be developed against HIV, beginning with the approval of AZT (zidovudine or Retrovir™) in 1987. In order to understand how these medications work, it will be helpful to briefly review the manner in which chromosomes carry genetic information.

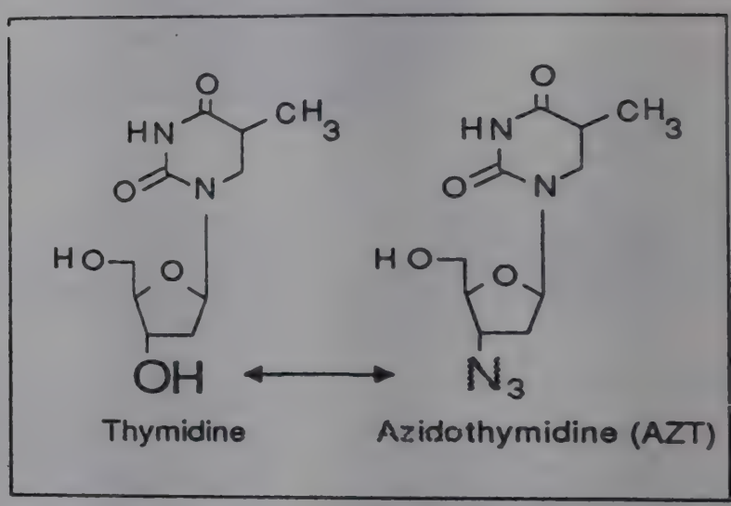


Figure 27: The nucleoside analogue AZT is a modified thymidine molecule.

There are four building blocks of the genetic code collectively known as nucleosides. Each is represented in the RNA or DNA strand as the first letter of the nucleoside's name (A, T, C, or G, standing for adenine, thymidine, cytidine and guanidine). When the ribosome reads from one end of the strand as it assembles proteins, each successive three letter set in the code (e.g., TCG) determines the next amino acid to be added to the growing protein chain.

The five reverse transcriptase inhibitors are all modified versions of one of the four naturally occurring nucleosides. When a modified nucleoside (known as a nucleoside analogue) is incorporated into the growing DNA chain, the modified portion of the molecule "jams" the process of reverse transcription by making it impossible for the next nucleoside in the sequence to be added.

For example, AZT is a modified version of thymidine. More specifically, an "azido" group (three nitrogen atoms) replaces an oxygen and hydrogen on one corner of the thymidine molecule, creating azidothymidine (AZT) (see Figure 27). In an individual taking AZT, when the virus's reverse transcriptase looks for a thymidine (T) to

incorporate into the growing DNA chain, it picks up an *azido*thymidine instead. The change in shape which comes with the addition of the azido group makes it impossible for more nucleosides to be added to the growing DNA chain (see Figure 28). If one imagines the usual reverse transcription process as the hooking together of successive freight train cars (nucleosides) to create a long train, the structural change in thymidine is analogous to inserting a caboose where it doesn't belong, thereby preventing further train elongation. AZT is thus a "DNA chain terminator"; it prevents the growing DNA chromosome that is being modeled after an RNA parent from being produced in its entirety. By blocking DNA synthesis, AZT prevents translation of the virus's genetic code into a functional DNA provirus.

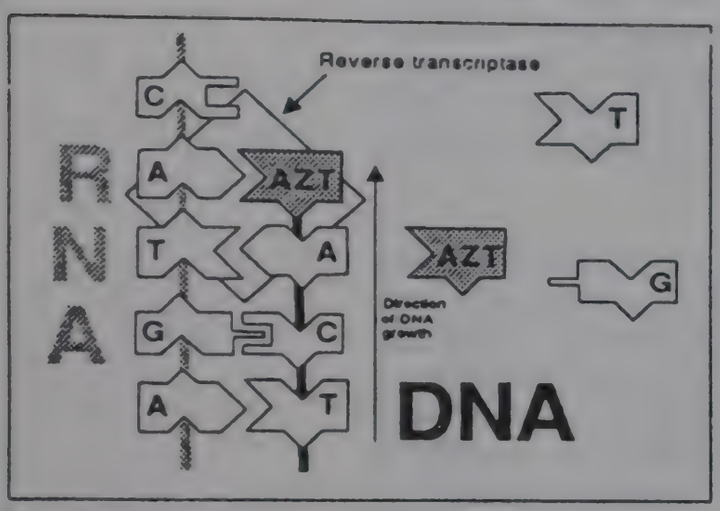


Figure 28: Reverse transcriptase incorporating an AZT molecule into a growing DNA chain, thereby terminating the chain.

The five available nucleoside analogue reverse transcriptase inhibitors include AZT (zidovudine or Retrovir™), ddI (didanosine or Videx™), ddC (zalcitabine or Hivid™), D4T (stavudine or Zerit™), and 3TC (lamivudine or Epivir™).

Non-nucleoside Analogues

Nevirapine (Viramune™) is the first licensed reverse transcriptase inhibitor whose mechanism of action is direct inhibition of the reverse transcriptase molecule (rather than through DNA chain termination.) Other drugs in this class are likely to be approved as well.

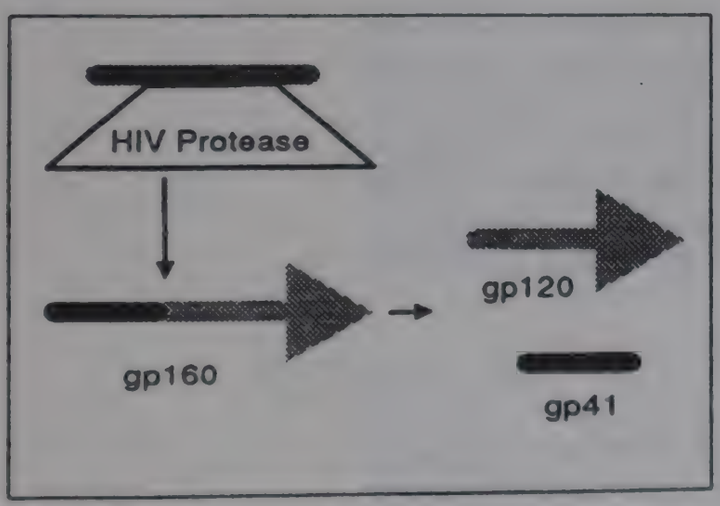


Figure 29: Protease acting as a cutting blade to divide a polyprotein into functional gp120 and gp41 proteins.

Protease Inhibitors

As discussed in Chapter 1, HIV's protease chops up polyproteins into their functional subunits, as seen in Figure 29. Three protease inhibitors have been licensed thus far: saquinavir (Invirase™), indinavir (Crixivan™), and ritonavir (Norvir™). Nelfinavir (Viracept™) is expected to be approved soon, and will no doubt be followed by additional compounds in this class.

Approach to Antiretroviral Therapy

The goals of anti-HIV treatment are to reduce viral replication as much as possible, and for this reason an individual's viral load is one of the most important determining factors (in addition to CD4 count) in judging when to initiate or change treatments.

When nucleoside analogues were first introduced (and for many years thereafter), therapy with one or perhaps two drugs together was the standard approach. The newer proteases are much more powerful

drugs, and are frequently combined with one or more nucleoside analogues ("triple therapy") to produce very powerful inhibition of the virus, leading in some instances to viral loads that are undetectable. In addition to decreases in viral loads, delayed progression of disease and increased survival are also being observed. The duration of benefits of intensive, three drug regimens is not yet known, however.

In addition to the advantages that these drugs can offer, each also has potential negative aspects, including side effects, toxicities, monitoring requirements, drug interactions, and financial costs. In some cases (especially with proteases) strict adherence to dosing schedules must be maintained, and in the case of ritonavir the medication must be kept refrigerated. Some agents can interfere with each other's absorption, and complicated schedules of adjusting medications with meals are common (some must be taken with food, others on an empty stomach). For all these reasons, decisions about initiating or changing therapy are highly individualized and require a well informed dialogue between clients and their health care providers.

Because the currently available regimens are so much more powerful than those previously available, it is not uncommon to hear discussions about the possibility of "eradicating" HIV from infected individuals. However, the concept is at this point only theoretical, and would require that HIV replication be arrested in all infected cells for a period longer than the lifespan of the longest-living cells. Studies are currently in progress to explore whether three years' treatment leading to undetectable viral levels is enough to clear all infected cells, thereby allowing discontinuation of medications.

Preventing Opportunistic Infections

In addition to drugs which target HIV itself, many agents can also be used to prevent some of the more serious opportunistic infections that can occur in the context of HIV infection. While the viral load is the most important parameter guiding decisions about anti-HIV therapy, it is the CD4 count that most directly reflects the immune system's vulnerability and is therefore the most important parameter in determining when to initiate various types of preventive treatments (also known as prophylaxis).

For example, individuals who have a CD4 count of 200 or less, or who have thrush or persistent and unexplained fevers, are at risk for developing *Pneumocystis carinii* pneumonia. A number of regimens are therefore routinely offered to prevent PCP in persons who are at risk.

In the appropriate context, prophylactic medications may also be advised for persons at risk of developing infections such as tuberculosis, toxoplasmosis, mycobacterium avium, and cytomegalovirus.[147,148]

In addition to prophylactic medications, vaccinations are routinely recommended for the prevention of influenza, pneumococcal pneumonia, and (where appropriate) hepatitis B.[149] While prophylactic regimens may be introduced at a particular CD4 count, vaccinations are usually recommended as soon as HIV infection is ascertained, since the antibody response to a given vaccination may decline as the immune system weakens over time.

[1]Nahmias AJ, Weiss J, Yao, et al. Evidence for human immunodeficiency virus infection with an HTLV III / LAV-like virus in central Africa, 1959. *Lancet* 1986;I:1279-1280.
[2]Corbitt G, Bailey AS, Williams G. HIV infection in Manchester, 1959. *Lancet* 1990;336:51.
[3]Garry RF, Witte MH, Drake WL et al. Documentation of an AIDS virus infection in the United States in 1968. *JAMA* 1988;260:2085-87
[4]Friedman-Kien AE, Laubenstein LJ, Zolla-Pazner S. Disseminated Kaposi's sarcoma in homosexual men. *Ann Int Med* 1982;96:693-700;
[5]Gottlieb MS, Schroff R, Saxon A, et al *Pneumocystis carinii* pneumonia and mucosal candidiasis in previously healthy homosexual men: Evidence of a new acquired cellular immunodeficiency *New Engl J Med* 1981;305:1425-31;
[6]Masur H, Michelis MA, Cunningham-Rundles S, et al. An outbreak of community-acquired *Pneumocystis carnii* pneumonia: Initial manifestation of cellular immune dysfunction. *New Engl J Med* 1981;305:1431-38.
[7]Although "HIV" has become the name most frequently used to refer to the causative agent of AIDS, several other names have also been used to describe the virus and may occasionally still be seen in newspapers and journals. These include HTLV-III (Human T-Lymphotropic virus Type III), ARV (AIDS Related Virus), and LAV (Lymphadenopathy-Associated virus).
[8]Ho DD, Samgadharan MG, Resnick L, et al. Primary Human T-Lymphotropic virus Type III Infection. *Ann Int Med* 1985; 103:880-883.
[9]Cooper DA, Gold J, Maclean P, et al. Acute AIDS retrovirus infection: definition of a clinical illness associated with seroconversion. *Lancet* 1985;1:537-40.
[10]Tindal B, Barker S, Donovan B, et al. Characterization of the acute clinical illness associated with human immunodeficiency virus infection. *Arch Int Med* 1988;148:945-49.
[11]Gabuzda DH, Hirsch MS. Neurologic manifestations of infection with human immunodeficiency virus: Clinical features and pathogenesis. *Ann Int Med* 1987:107:383-91.
[12]Sully RE, ed., Case Records of the Massachusetts General Hospital, Case 33-1989, *New Engl J Med* 1989;321:454-463.
[13]Pantaleo G, Graziosi C, Demarest JF, et al. HIV infection is active and progressive in lymphoid tissue during the clinically latent stage of disease. *Nature* 1993;362:355-358.
[14]Embretson J, Zupancic M, Ribas JL, et al. Massive covert infection of helper T lymphocytes and macrophages by HIV during the incubation period of AIDS. *Nature* 1993;362:359-362.
[15]Cooper DA, Imrie AA, Penny R. Antibody response to human immunodeficiency virus after primary infection. *J Inf Dis* 1987;155:1113-1118.
[16]Imagawa DT, Lee MH, Detels R, et al. Human immunodeficiency virus type 1 infection in homosexual men who remain seronegative for prolonged periods. *New Engl J Med* 1989;320:1458-1462.
[17]Ranki A, Valle SL, Krohn K, et al. Long latency precedes overt seroconversion in sexually transmitted human immunodeficiency virus infection. *Lancet* 1987;2:589-593.
[18]Masur H, Ognibene FP, Yarchoan R, Lane HC, et al. CD4 counts as predictors of opportunistic pneumonias in human immunodeficiency virus (HIV) infection. *Ann Int Med* 1989;111:223-231.
[19]Melbye M, Biggar RJ, Blattner WA, et al. Long term seropositivity For human t-lymphotropic virus type III in homosexual men without the acquired immunodeficiency syndrome: Development of immunologic and clinical abnormalities. *Ann Int Med* 1986;104:496-500.
[20]Moss AR, Bacchetti P, Carlson J, et al. Seropositivity for HIV and the development of AIDS or AIDS related condition: three year follow up of the San Francisco General Hospital Cohort. *Brit Med Journ* 1988;296:745-750.
[21]Perelson AS, Neumann AU, Markowitz M, et al. HIV-1 dynamics in vivo: Virion clearance rate, infected cell life-span, and viral generation time. *Science* 1996;271:1582-1586.
[22]Wei X, Ghosh SK, Taylor ME, Johnson VA, et al. Viral dynamics in human immunodeficiency virus type 1 infection. *Nature* 1995;373:117-122.
[23]Ho DD, Neumann AE, Perelson A, et al. Rapid turnover of plasma virions and CD4 lymphocytes in HIV-1 infection. *Nature* 1965;373:123-126.
[24]Buchbinder S, Vittinghoff E, Park MS, Elbeik T, Kalams S, Katz M, Walter B, Feinberg M. Long-term non-progression in the San Francisco City Clinic Cohort. XIth International Conference on AIDS, Vancouver, Canada, July 7-12, 1996; Abstract Tu.C.533 (Volume One, p. 251).
[25]Henrard DR, Phillips JF, Muenz LR, et al. Natural history of HIV-1 cell-free viremia. *JAMA* 1995; 274:554-558.
[26]Ho DD. Viral counts count in HIV infection. *Science* 1996;272:1124-1126.
[27]Deacon NJ, Tyskin A, Solomon A. Genomic structure of an attenuated quasi species of HIV-1 from a blood transfusion donor and recipients. *Science* 1995;270:988-991
[28]Asjo B, Morfeldt-Manson L, Albert J, et al. Replicative capacity of human immunodeficiency virus from patients with varying severity of HIV infection. *Lancet* 1986;2:660-2.
[29]Tersmette M, Lange JMA, Miedema F et al. Association between biological properties of human immunodeficiency virus variants and risk for AIDS and AIDS mortality. *Lancet* 1989;1:983-985.
[30]Fisher AG, Ensoli B, Looney D, Wong-Staal F, et al. Biologically diverse molecular variants within a single HIV-1 isolate. *Nature* 1988;334:444-447
[31]Saag MS, Hahn BH, Shaw GM, et al. Extensive variation of human immunodeficiency virus type-1 *in vivo*. *Nature* 1988;440-444
[32]Richman DD, Bozzette SA. The impact of the syncytium-inducing phenotype of human immunodeficiency virus on disease progression. *J Infect Dis* 1994;169:968-74.

[33]Isaaksson B. AIDS two months after primary human immunodeficiency virus infection. *J Infect Dis* 1988;158:866-868.
[34]Cheng-Mayer C, Seto D, Tateno M, Levy JA. Biologic features of HIV-1 that correlate with virulence in the host. *Science* 1988;240:80-82.
[35]Coombs RW, Collier AC, Corey L, et al. Plasma viremia in human immunodeficiency virus infection. *New Engl J Med* 1989; 321:1626-31.
[36]Keet IPM, Krijnen P, Koot M, et al. Predictors of rapid progression to AIDS in HIV-1 seroconverters. *AIDS* 1993;7:51-57.
[37]Isaaksson B. AIDS two months after primary human immunodeficiency virus infection. *J Infect Dis* 1988;158:866-868.
[38]Pedersen C, Lindhart OB, Jensen BL, et al. Clinical course of primary HIV infection: Consequences for subsequent course of infection. *Brit Med J* 1989;299:154-157.
[39]Plummer FA, Fowke K, Nagelkerke NJD, et al. Evidence of resistance to HIV among continuously exposed prostitutes in Nairobi, Kenya. IXth International Conference on AIDS, Berlin, Germany, June 6-11, 1993 (Abstract WS-A07-3, Volume 1, p. 23).
[40]Buchbinder SP, Mann L, Louie L, Villinger F, Katz M, Holmberg, et al. Healthy long-term positives (HLPs): Genetic cofactors for delayed HIV disease progression. IXth International Conference on AIDS, Berlin, June 6-11, 1993, WS-B-03-2.
[41]Dragic T, Litwin V, Allaway GP, et al. HIV-1 entry into CD4+ cells is mediated by the chemokine receptor CC-CKR-5. *Nature* 1996;381:667-673.
[42]Feng Y, Broder CC, Kennedy PE, Berger EA. HIV-1 entry cofactor: Functional cDNA cloning of a seven-transmembrane, G-protein-coupled receptor. *Science* 1996; 272:872-877.
[43]Deng H, Liu R, Wilmeier W, et al. Identification of a major co-receptor for primary isolates of HIV-1. *Nature* 1996;381:661-66.
[44]Alkhatib G, Combadiere C, Broder CC, et al. CC CKR5: A RANTES, MIP-1a, MIP-1b receptor as a fusion cofactor for macrophage-tropic HIV-1. *Science* 1996;272:1955-1958.
[45]Liu R, Paxton WA, Choe S, et al. Homozygous defect in HIV-1 coreceptor accounts for resistance of some multiply-exposed individuals to HIV-1 infection. *Cell* 1996;86:367-377.
[46]Samson M, Libert F, Doranz BJ. Resistance to HIV-1 infection in caucasian individuals bearing mutant alleles of the CCR-5 chemokine receptor gene. *Nature* 1996;382:722-725.
[47]Bacchetti P, Moss AR. Incubation period of AIDS in San Francisco. *Nature* 1989;338:251-253.
[48]Lifson AR, Hessol N, Rutherford G, et al. Natural history of HIV infection in a cohort of homosexual and bisexual men: Clinical and immunologic outcome, 1977-1990. VI International Conference on AIDS, San Francisco, Vol 1, p. 142.
[49]CDC. Immunization of children infected with human T-lymphotropic virus type III/lymphadenopathy-associated virus. *MMWR* 1986;35:595-606.
[50]Blanche S. Materno-fetal HIV transmission. Xth International Conference on AIDS, Yokohama, Japan, August 7-12, 1994 (Abstract PS11, Volume 1, p 50)
[51]Lui KJ, Lawrence DN, Morgan WM, et al. A model-based approach for estimating the mean incubation period of transfusion-associated acquired immunodeficiency syndrome. *Proc Nat Acad Sci* 1986;83:3051-5;
[52]Bove J. Transfusion-associated hepatitis and AIDS: What is the risk? *New Engl J Med* 1987;317:242-245.
[53]Anderson KC, Gorgone BC, Marlink RG, et al. Transfusion-acquired human immunodeficiency virus infection among immunocompromised persons. *Ann Int Med* 1986;105:519-527.
[54]Medley GF, Anderson RM, Cox DR, Billard L. Incubation period of AIDS in patients infected via blood transfusion. *Nature* 1987;328:719-721.
[55]Centers for Disease Control. Update on acquired immunodeficiency syndrome (AIDS) - United States. *MMWR* 1982;31:507-514.
[56]Krause RM. Koch's postulates and the search for the AIDS agent. *Rev Infect Dis* 1984;6:270-279.
[57]Centers for Disease Control. Revision of the case definition of acquired immunodeficiency syndrome for national reporting - United States. *MMWR* 1985;34:373-375.
[58]Centers for Disease Control. Revision of the CDC surveillance case definition for acquired immunodeficiency syndrome. *MMWR* 1989;36(1S).
[59]Centers for Disease Control. 1993 revised classification system for HIV infection and expanded surveillance case definition for AIDS among adolescents and adults. *MMWR* 1992;41(RR-17).
[60]Centers for Disease Control and Prevention. 1993 revised classification system for HIV infection and expanded surveillance case definition for AIDS among adolescents and adults. *MMWR* 1992;41(RR-17).
[61]These are referred to as *secondary* because they occur after, and because of, previously existing HIV infection.
[62]Pneumocystis is referred to here as a protozoan, although some have suggested that due to similarities in RNA sequences between pneumocystis and some fungi, it should be classified as a fungus. For a discussion of this point, see Edman JC, Kovacs JA, Masur H, et al. Ribosomal RNA sequence shows *Pneumocystis carinii* to be a member of the fungi. Nature 1988;334:519-522.
[63]Bissuel F, Cotte L, Rabodonirina M, et al. Paromomycin: An effective treatment for cryptosporidial diarrhea in patients with AIDS. *Clin Infect Dis* 1994;18:447-449.
[64]Johns DR, Tierney M, Felsenstein D. Alteration in the natural history of neurosyphilis by concurrent infection with the human immunodeficiency virus. *N Engl J Med* 1987;316:1569-1572.
[65]Tramont EC. Syphilis in the AIDS era. *N Engl J Med* 1987; 316:1600-1601.
[66]Musher DM, Hamill RJ, Baughn RE. Effect of human immunodeficiency virus (HIV) infection on the course of syphilis and on the response to treatment. Ann Int Med 1990;113:872-81.

[67] Selwyn PA, Hartel D, Lewis VA, et al. A prospective study of the risk of tuberculosis among intravenous drug users with human immunodeficiency virus infection. *N Engl J Med* 1989;320:545-550.
[68] CDC. Revision of the CDC surveillance case definition for acquired immunodeficiency syndrome. *MMWR* 1987;36(no. 1S).
[69] Coodley GO, Loveless MO, Merrill TM. The HIV wasting syndrome: A review. *J AIDS* 1994;7:681-694.
[70] Chang Y, Cesarman E, Pessin MS, et al. Identification of herpesvirus-like DNA sequences in AIDS-associated Kaposi's sarcoma. *Science* 1994;266:1965-1869.
[71] Kedes DH, Operskalski E, Busch M, et al. The seroepidemiology of human herpesvirus 8 (Kaposi's sarcoma-associated herpesvirus): Distribution of infection in KS risk groups and evidence for sexual transmission. *Nature Medicine* 1996;2:918-924.
[72] Lefrere JJ, Meyohas MC, Mariotti M, et al. Detection of human herpesvirus 8 sequences before the appearance of Kaposi's sarcoma in human immunodeficiency virus (HIV)-positive subjects with a known date of HIV seroconversion. *J Inf Dis* 1996;173:283-287.
[73] Centers for Disease Control. AIDS in women. *MMWR* 1990;39:845-846.
[74] Centers for Disease Control. Interpretive criteria used to report Western Blot results for HIV-1-antibody testing - United States. *MMWR* 1991;40:694-695.
[75] Celum CL, Coombs RW, Lafferty W, et al. Indeterminate human immunodeficiency virus type 1 Western Blots. Seroconversion risk, specificity of supplemental tests, and an algorithim for evaluation. *J Infect Dis* 1991;164:656-664.
[76] Jackson JB, MacDonald KL, Cadwell J, et al. Absence of HIV infection in blood donors with indeterminate western blot tests for antibody to HIV-1. *N Engl J Med* 1990;322:217-222.
[77] Phair JP, Wolinsky S. Diagnosis of infection with the human immunodeficiency virus. *Clin Infect Dis* 1992;15:13-16.
[78] Mayer KH, Stoddard AM, McCusker J, et al. Human T-lymphotropic virus type-III in high risk, antibody negative homosexual men. *Ann Int Med* 1986;104:194-196.
[79] Burke DS, Brundage JF, Redfield RR et al. Measurement of the false positive rate in a screening program for human immunodeficiency virus infections. *N Engl J Med* 1988;319:961-964.
[80] Farzadegan H, Polis MA, Saah AJ, et al. Loss of human immunodeficiency virus type 1 (HIV-1) antibodies with evidence of viral infection in asymptomatic homosexual men: A report from the Multicenter AIDS Cohort Study. *Ann Int Med* 1988;108:785-790.
[81] Foreman J. Suicides raise questions on AIDS testing. *The Boston Globe* February 2, 1987:17.
[82] Glass RM. AIDS and suicide. *JAMA* 1988;259:1369-70.
[83] Goldblum P, Moulton J. AIDS-related suicide: A dilemma for health care providers. *Focus* 1986;2:1-2.
[84] Marzuk PM, Tierney H, Tardiff, Mann J, et al. Increased risk of suicide in persons with AIDS. *JAMA* 1989;259:1333-37.
[85] Wormser GP, Bittker S, Forseter G, et al. Absence of infectious human immunodeficiency virus type 1 in "natural" eccrine sweat. *J Infect Dis* 1992;165:155-158.
[86] Borzy MS, Connell RS, Kiessling AA. Detection of human immunodeficiency virus in cell-free seminal fluid. *J AIDS* 1988;1:419-24.
[87] Detels R, English P, Visscher BR, et al. Seroconversion, sexual activity, and condom use among 2915 seronegative men followed for up to 2 years. *J AIDS* 1989;2:77-83.
[88] Goldberg DJ, Green ST, Kennedy DH, et al. HIV and orogenital transmission. *Lancet* 1988;2:1363.
[89] Lifson AR, O'Malley PM, Hessol NA, et al. HIV seroconversion in homosexual men after receptive oral intercourse with ejaculation: implications for counselling concerning safe sexual practices. *AM J PUB HEALTH* 1990;80:1509-11.
[90] Mayer KH, DeGruttola V. Human immunodeficiency virus and oral intercourse. *Ann Int Med* 1987;107:428-9.
[91] Rozenbaum W, Gharakhanian S, Cardon B, et al. HIV transmission by oral sex (letter). *Lancet* 1988;1:1395.
[92] Spitzer PG, Weiner NJ. Transmission of HIV infection from a woman to a man by oral sex. *New Engl J Med* 1989;320:251.
[93] Fullilove RE, Fullilove MT, Browser BP, Gross SA. Risk of sexually transmitted disease among black adolescent crack users in Oakland and San Francisco, Calif. *JAMA* 1990;263:851-855.
[94] Weiss SH. Links between cocaine and retroviral infection. *JAMA* 1989;261:607-609.
[95] Simonsen JN, Cameron DW, Gakinya MN, et al. Human immunodeficiency virus infection among men with sexually transmitted diseases: Experience from a center in Africa. *New Engl J Med* 1988;319:274-278.
[96] Bwayo et al. HIV infection in long distance truck drivers in Kenya: Seroprevalence, seroincidence, and risk factors. VIII Int'l Conference on AIDS (Amsterdam, 7/92) Abstract ThC 1514.
[97] Tager IB et al., Modifiers of the protective effect of circumcision; VIII Int'l Conference on AIDS (Amsterdam, 7/92) Abstract PoC 4299.
[98] Kreiss J, Hopkins S. The association between circumcision status and HIV infection among homosexual men. VIII Int'l Conference on AIDS (Amsterdam, 7/92) Abstract PoC 4091.
[99] Jones EF, Forrest JD. Contraceptive failure rates based on the 1988 NSFG. *Fam Plann Perspect*. 1992;24:12-19.
[100] Trussell J, Hatcher RA, Cates W, Stewart FH, Kost K. Contraceptive failure in the United States: an update. *Stud Fam Plann*. 1991;21:51-54.
[101] De Vincenzi I, and the European Study Group on Heterosexual Transmission of HIV. A longitudinal study of human immunodeficiency virus transmission by heterosexual partners. *N Engl J Med* 1994;331:341-346.

[102] Roumeliotou A, Papautsakis G, Kallinikos G, Papaevangelou G. Effectiveness of condom use in preventing HIV infection in prostitutes. *Lancet* 1988;II:1249
[103] Launan Y, Peynet J, Verroust F. HIV infection in sexual partners of HIV-seropositive patients with hemophilia. *N Engl J Med* 1989;320:183
[104] Rekart L, Barnett JA, Manzon LM. Nonoxynol 9: Its adverse effects Sixth International Conference on AIDS, San Francisco. S C. 36, Vol. 3: 104
[105] Fihn SD, Boyko EJ, Normand EH, et al. Association betwen use of spermicide-coated condoms and *Escherichia coli* urinary tract infection in young women. *American Journal of Epidemiology*, 1996(144):512-520.
[106] National Institute on Drug Abuse. Proposed recommendations to prevent HIV transmission by sharing drug injection equipment. *Community Alert Bulletin*, 23 March, 1993.
[107] Vittecoq D, Mettetal JF, Rouzioux C, Bach JF Acute HIV infection after acupuncture treatments. *New Engl J Med* 1989;320:250-1.
[108] Pizo PA, Butler KM. In the vertical transmission of HIV, timing may be everything. *New Engl J Med* 1991;325:652-654.
[109] Lepage P, Van de Perre P, Carael M, et al. Postnatal transmission of HIV from mother to child. *Lancet* 1987;2:400; Ziegler JB, Cooper DA, Johnson RO et al. Postnatal transmission of AIDS-associated retrovirus from a mother to an infant. *Lancet* 1985;1:896-897.
[110] Van de Perre. P, Simonon A, Msellati P, et al. Postnatal transmission of human immunodeficiency virus type 1 from mother to infant: A prospective cohort study in Kigali, Rwandi. *New Engl J Med* 1991;325:593-598.
[111] Belitsky V. Children infect mothers in AIDS outbreak at a Soviet hospital. *Nature* 1989;37:493.
[112] Centers for Disease Control and Prevention. Zidovudine for the prevention of HIV transmission from mother to infant. *MMWR* 1994;43:285-287.
[113] Pizzo PA, Butler KM. In the vertical transmission of HIV, timing may be everything. *New Engl J Med* 1991;325:652-654.
[114] US Public Health Service. Provisional Public Health Service inter-agency recommendations for screening donated blood and plasma for antibody to the virus causing acquired immunodeficiency syndrome. *MMWR* 1985;34:1-4.
[115] US Public Health Service. Update: revised Public Health Service definition of persons who should refrain from donating blood and plasma - United States. *MMWR* 1985;34:547-8.
[116] Bove JR. Transfusion-associated hepatitis and AIDS: What is the risk? *New Engl J Med* 1987;317:242-5.
[117] Ward JW, Holmberg SD, Jaffe HW, et al. Transmission of human immunodeficiency virus (HIV) by blood transfusions screened as negative for HIV antibody. *New Engl J Med* 1988;318:473-8.
[118] Fnedland GH, Klein RS. Transmission of the human immunodeficiency virus. *New Engl J Med* 1987; 317: 1125-1135.
[119] Friedland GH, Risk of HTLV-III/LAV transmission to household contacts. *New Engl J Med* 1986; 315:258.
[120] Friedland GH, et al. Lack of transmission of HTLV-III/LAV infection to household contacts of patients with AIDS or AIDS-related complex with oral candidiasis. *New Engl J Med* 1986;314:344-349.
[121] Kaplan JE, et al. Evidence against transmission of Human T-Lymphotropic Virus Type III/Lymphadenopathy-associated virus (HTLV-III/LAV) in families of children with the acquired immunodeficiency syndrome. *Ped Inf Dis* 1985;4:468-471.
[122] Messerli FH. Transmission of AIDS: The case against casual contagion. *New Engl J Med* 1986;314:379-380.
[123] Sande MA, Transmission of AIDS: The case against casual contagion. *New Engl J Med* 1986;314:380-82.
[124] Centers for Disease Control and Prevention. HIV transmission between two adolescent brothers with hemophilia. *MMWR* 1993;42:948-951.
[125] Centers for Disease Control and Prevention. Human immunodeficiency virus transmission in household settings - United States. *MMWR* 1994;43:347-356.
[126] Resnick L, Veren K, Salahuddin Z, et al. Stability and inactivation of HTLV-III under clinical and laboratory environments. *JAMA* 1986;255:1887-91.
[127] Henderson DK, Fahey BJ, Willy M et al. Risk for occupational transmission of human immunodeficiency virus type 1 (HIV-1) associated with clinical exposures: A prospective evaluation. *Ann Int Med* 1990;113:740-6.
[128] CDC Update: Human immunodeficiency virus infections in health-care workers exposed to blood of infected patients. *MMWR* 1987;36:285-9.
[129] Centers for Disease Control. Update: Universal precautions for prevention of transmission of human immunodeficiency virus, hepatitis B virus, and other bloodborne pathogens in health-care setting. *MMWR* 1988;37:377-388.
[130] Centers for Disease Control and Prevention. AIDS Surveillance Report, Year-end Edition. 1993;5:1-33.
[131] Robert LR, Marcus R, Gooch B, et al. Update: Evaluating the risk of HIV transmission from health-care workers to patients. IXth International Conference on AIDS, Berlin, June 6-11, 1993; WS-C12-4.
[132] Centers for Disease Control. Recommendations for prevention of HIV transmission in health-care settings. *MMWR* 1987;36:Suppl(2).
[133] HIV/AIDS Surveillance Report, Midyear edition 1996;8.
[134] HIV/AIDS Surveillance Report, Year-end edition 1995;7
[135] Centers for Disease Control *MMWR* 1990;39,RR-16.
[136] Centers for Disease Control HIV & AIDS Trends, published on the Internet at http://www.cdcnac.org.hivtrend.html

[137] Mann J, Tarantola DJM, Netter (eds). *AIDS in the World*, Harvard University Press, 1992, p.2.
[138] Mann, *op. cit.*, p 31.
[139] Mann, *op. cit.*, p 30.
[140] U.N. finds teen-age girls at high risk of AIDS. *New York Times* 1993: 30 July, A6.
[141] Note that the total for these percentages exceeds 100%, since Hispanics may also be counted as members of white and black communities.
[142] Centers for Disease Control and Prevention, "Update: Mortality attributable to HIV infection among persons aged 25-44 years - United States, 1994," *Morbidity and Mortality Weekly Report* 45(1996):121-125.
[143] Hein K. HIV in teens exploding. *Medical Tribune* July 8, 1993: 12.
[144] United Nations AIDS Program (UNAIDS) and World Health Organization, *"The HIV/AIDS Situation in Mid-1996"* (published on the internet at http://www.unaids.org/highband/press/situat96.html)
[145] Zylke, Jody W. Interest heightens in defining, preventing AIDS in high risk adolescent population. *JAMA* 1989;262:2197.
[146] Data from U.S. Census Bureau, quoted in Saltus R. AIDS seen taking a huge toll in Africa. *The Boston Globe* February 17, 1990, p 2.
[147] US Public Health Service, Infectious Diseases Society of America. USPHS/IDSA Guidelines for the prevention of opportunistic infections in persons infected with human immunodeficiency virus: A summary. *MMWR* 1995;44(RR-8):1-34.
[148] US Public Health Service, Infectious Diseases Society of America. Prevention of opportunistic infections in persons infected with human immunodeficiency virus. *J Infect Dis* 1995;21(Suppl 1):S1-S141.
[149] Immunization Practices Advisory Committee. Update on adult immunization. *MMWR* 1991;40(RR-12).

2

MATERIAL ON HIV/AIDS

SENT BY

MEDICAL MISSION INSTITUTE

UNIT FOR HEALTH SERVICES AND HIV/AIDS

SALVATORSTR. 22

D-97074 WÜRZBURG

GERMANY

Prevention of mother-to-child transmission of HIV-1 in Africa

Stefan Z. Wiktor*†, Ehounou Ekpini* and Ruth W. Nduati‡

AIDS 1997, **11** (suppl B):S79–S87

Keywords: HIV-1, pregnancy, vertical transmission, prevention, intervention, Africa

Introduction

Following the release of the results of the AIDS Clincial Trials Group (ACTG) 076 study, the routine use of zidovudine among HIV-infected pregnant women in the United States and Europe has resulted in a significant reduction in the rate of mother-to-child transmission of HIV-1 [1–5]. Despite this encouraging development, most women in Africa will not benefit from these advances for the foreseeable future because of inadequate prenatal health care, the unavailability of prenatal HIV testing, and the high cost and complexity of the recommended regimen. Yet it is in Africa that the need for an effective intervention is the greatest. It is estimated that of the approximately 500 000 children who became infected with HIV worldwide in 1995 (about 1400 per day), nearly 70% were born in sub-Saharan Africa [6]. With the prevalence of HIV among pregnant women surpassing 35% in some parts of Africa, the number of HIV-infected children will continue to increase [7]. Therefore, there exists a public health imperative to build on the findings from the developed countries to identify realistic, effective, and implementable interventions to reduce mother-to-child transmission of HIV as well as to prevent HIV infection in women and to protect the health of HIV-infected women in Africa.

Rates of mother-to-child transmission of HIV-1

Even prior to the widespread use of zidovudine among pregnant women in developed countries, the rates of HIV-1 mother-to-child transmission in these countries were lower than rates in developing countries [8]. Part of this difference is because of methodological issues such as completeness of follow-up and varying criteria for HIV infection used in different studies. However, even when a standardized definition is applied, HIV-1 transmission rates ranged from 14 to 25% in developed countries and 25 to 30% in developing countries [9]. The reasons for the higher rates in developing countries are not clear; however, possibilities include the near universal practice of breast-feeding among HIV-infected women in these countries, a higher proportion of women with more advanced immunosuppression and malnutrition, lack of access to health care, a higher prevalence of chorio-amnionitis or other conditions that may increase the risk of transmission, as well as differential transmission of different HIV variants [10–11].

Timing of mother-to-child transmission of HIV-1

A clear understanding of the timing of perinatal transmission of HIV-1 is of critical importance in order to target interventions appropriately. Based on evidence from both clinical and laboratory investigations, there is now broad consensus that, although mother-to-child transmission of HIV can occur during pregnancy (*in utero*), and after delivery (postpartum), the majority of transmissions occur at the end of pregnancy and during labor and delivery (intrapartum).

Evidence for in-utero transmission of HIV-1 comes primarily from virologic testing of aborted fetuses and of newborns. Although HIV can be found in fetal tissue as early as 8 weeks gestation [12], a large case series indicates that in-utero transmission of HIV is not a common event [13]. Even with the use of highly sensitive techniques such as polymerase chain reaction (PCR), only 38% of formula-fed HIV-infected children, presumably those infected *in utero*, have detectable HIV at the time of birth, while the remainder, presumably infected during the intrapartum period, have HIV detectable in the first few months of life [14]. Among breast-fed children, estimating the timing of transmission is difficult because available tests cannot distinguish between intrapartum and early postpartum transmission. However, in one study from

From the *Projet RETRO-CI, Abidjan Côte d'Ivoire, the †Division of HIV/AIDS Prevention, Centers for Disease Control and Prevention, Atlanta, USA and the ‡Department of Pediatrics, University of Nairobi, Nairobi, Kenya.

Requests for reprints to: Dr Stefan Wiktor, Projet RETRO-CI, 01 BP 1712, 01 Abidjan, Côte d'Ivoire.

© Rapid Science Publishers ISBN 1-85650-019-5 ISSN 1350-2840

Zaire, 23% of HIV-infected children were estimated to have had intra-uterine transmission, 65% intrapartum/early postpartum transmission, and 12% late postpartum transmission [15]. Similar results were obtained in a study from Rwanda [16].

The hypothesis that the majority of HIV-infected children acquire HIV near the time of birth is corroborated by the finding that first-born twins and children born by vaginal delivery are more likely to be HIV infected than are second-born twins and children born by cesarean section, respectively [17–19]. This higher rate of transmission is thought to be a result of greater exposure of the newborn to the HIV virus through ascending infection or to HIV-infected blood and vaginal secretions during passage through the birth canal.

Although transmission of HIV through breast milk has been clearly documented among women who acquired HIV infection after delivery [20], the rate and timing of this route of transmission are difficult to determine. A meta-analysis of published studies estimated this risk to be 14% for women infected prior to delivery and 29% for women who acquired HIV infection after delivery [21]. More recent studies from Africa support the concept that the risk of postnatal transmission is high. In a study from Nairobi, 40% of children who ultimately became HIV infected did so following a seronegative window of 3–9 months, suggesting that they were infected postnatally [22]. Among children in Côte d'Ivoire who were uninfected at 3 or 6 months of age and who were breast-fed by their HIV-1-seropositive mothers, 12% acquired HIV postnatally; among children who were breast-fed for 24 months, this rate was estimated to be 20% [23].

Risk factors associated with mother-to-child transmission of HIV

Table 1 summarizes the various factors that have been associated with mother-to-child transmission of HIV-1. Maternal plasma viral load has recently been recognized as an important factor in promoting mother-to-child HIV transmission [24–27]. In a study from New York, none of the 63 women with viral load below 20 000 copies/ml at delivery transmitted virus to their offspring, compared with 100% of the 13 women with >80 000 copies/ml [28]. However, evidence from the ACTG 076 and other studies indicates that viral factors other than viral load, for example the biologic phenotype, are also important since zidovudine therapy is associated with only a mild reduction in viral load, and transmission occurs across the whole range of HIV-1 RNA levels [29–31].

Markers of advanced maternal HIV infection (including a low CD4 lymphocyte count with or without an elevated CD8 lymphocyte count, presence of p24 antigen, and presence of HIV-related clinical symptoms) are also strong predictors of transmission of HIV [32–34]. In addition, mother's immunologic response to HIV may also play a role in mother-to-child transmission, but results have been contradictory. In some studies, higher maternal levels of neutralizing antibodies or antibodies that bind certain epitopes of gp120 or gp160 were associated with lower transmission, while in other studies no association was found [35–37].

Table 1. Factors associated with mother-to-child transmission of HIV-1.

Viral factors
Biological phenotype
Maternal factors
High plasma HIV viral load
Low CD4 count
Absence of neutralizing antibody response
Vitamin A deficiency
Chorioamnionitis
Obstetrical factors
Prolonged rupture of membranes
Intrapartum hemorrhage
Instrumentation
Child factors
Prematurity
Low birthweight
First born twin
Longer duration of breast-feeding

The presence of sexually transmitted diseases (STD), chorioamnionitis, and placental inflammation also influence mother-to-child transmission of HIV [33,38,39]. Maternal nutritional status may also be an important determinant of transmission since a low maternal vitamin A serum level has been associated with mother-to-child transmission of HIV in some but not all studies from Africa and the United States [40–43].

A number of obstetrical factors which presumably increase the newborn's contact to infected maternal blood and/or vaginal secretions are also associated with transmission. These include prolonged rupture of membranes, intrapartum hemorrhage, and invasive obstetrical procedures such as episiotomy and scalp electrode placement [19,44,45].

There are limited data concerning risk factors for postnatal transmission. However, factors such as prolonged breast-feeding, presence of breast abscesses in the mother, oral thrush in the infants as well the detection of HIV DNA in breast milk samples appear to be associated with transmission, while presence of HIV-1-specific immunoglobulin (Ig)M antibodies are protective [23,46,47]. Maternal vitamin A deficiency may also play a role

postpartum transmission since it was associated with a 20-fold increased risk for the presence of HIV-1 DNA in breast milk among immunosuppressed women [48].

The broad range of risk factors that are associated with mother-to-child transmission of HIV-1 and the different times at which this transmission can occur suggest that more than one mechanism of transmission of HIV exists. A number of interventions targeting one or more of these components have been proposed as a means to reduce the rate of this transmission.

Interventions to prevent mother-to-child transmission of HIV

Background

A number of clinical trials to evaluate different interventions to prevent mother-to-child transmission of HIV are either planned or under way in Africa (Table 2). All of these interventions, with the exception of vitamin A supplementation and vaginal disinfection, require prenatal HIV counseling and testing to identify HIV-infected pregnant women. In view of the limited resources available for health-related expenditures in Africa, this necessary step represents a significant barrier to their large-scale implementation. Prenatal HIV counseling and testing is currently unavailable to African women outside of specialized research settings, and its cost (estimated to be between US$12–US$18 per woman tested) is higher than the annual per capita health expenditure of many African countries [49]. Furthermore, the social and cultural impact of identifying HIV infection in asymptomatic persons in Africa is poorly understood. For example, the low rate of return for post-test counseling in some settings is not well elucidated. It may be due to financial and other barriers that prevent women from returning to the clinic, or it may be an indication that many women who actually do not wish to know their HIV status do not feel free to refuse an HIV test [50]. In addition, HIV testing is not without risk, as researchers have documented violence to women following the disclosure of their HIV test result to their partner [50]. Therefore, an ideal intervention would need to be sufficiently safe and acceptable to be administered to all women regardless of HIV infection status, thereby eliminating the need for prenatal HIV counseling and testing and would be sufficiently inexpensive and easy to administer that it could be widely implemented even in the poorest countries (Table 3).

Table 2. Proposed, ongoing, and completed interventional studies to reduce mother-to-child HIV transmission in Africa.

Intervention	Country	Agent	Status
Requiring HIV testing			
Antiretrovirals	Côte d'Ivoire	Zidovudine vs placebo	Ongoing
	Côte d'Ivoire/ Burkina Faso	Zidovudine vs placebo	Ongoing
	Tanzania/South Africa/Uganda	Zidovudine/3TC vs placebo	Ongoing
	Ethiopia	Zidovudine vs placebo	Planned
	Uganda	Zidovudine/ nevirapine vs placebo	Planned
Immunological	Uganda	HIVIG vs IVIG	Ongoing
Breast milk alternatives	Kenya	Formula-feeding vs breast-feeding	Ongoing
Not requiring HIV testing			
Vaginal disinfection	Malawi	Chlorhexidine vs no intervention	Completed
	Côte d'Ivoire/ Burkina Faso	Benzalkonium vs placebo	Ongoing
	Kenya	Chlorhexidine vs placebo	Ongoing
Vitamin A	Malawi	Vitamin A vs placebo	Ongoing
	Tanzania	Vitamin A/multi-vitamins vs placebo	Ongoing
	South Africa	Vitamin A vs placebo	Ongoing
	Zimbabwe	Vitamin A/multi-vitamins vs placebo	Ongoing

HIVIG, hyperimmune anti-HIV intravenous immunoglobulin; IVIG, intravenous immunoglobulin; 3TC, lamivudine; vs, versus.

Table 3. Attributes of proposed interventions to reduce mother-to-child transmission of HIV-1.

Intervention	HIV testing	Safe	Effect.	Simple	Cost
Zidovudine	Yes	+++	+++	++	++
Other antiretrovirals	Yes	?	?	++	+++
Passive immunization	Yes	++	?	+	+++
Cesarean section	Yes	++	?	+	+++
Breast-feeding alternatives	Yes	++	?	++	++
Vaginal disinfection	No	+++	+	++	+
Vitamin A therapy	No	+++	?	+++	+

Effect., effective; +, low; ++, moderate; +++, high; ?, unknown. Adapted with permission [51].

Preventing pregnancies in HIV-infected women

The ultimate goal of intervention strategies that focus on pregnant women should be to have both a healthy mother and child. The best way to achieve this goal is first to prevent HIV infection in the women of child-bearing age and, failing that, to provide them with the means of avoiding unwanted pregnancies [52]. Effective interventions to accomplish these goals already exist in the form of education for behavior change, STD control, and condom and contraceptive promotion. Prenatal HIV counseling and testing can play an important role in this

educational strategy since properly counseled women can learn how to prevent HIV infection, other STD, and future pregnancies. Furthermore, in settings where women often attend antenatal clinics without their partners, appropriate counseling should provide women with skills on how to discuss and negotiate safe sex with their partners. In the context of research settings, providing HIV counseling and testing services as well as contraceptive and condom promotion can reduce HIV seroincidence in HIV-negative women and fertility and gonorrhea rates in HIV-positive women [53,54]. However, even in these settings, the rate of contraceptive use is low and the fertility rates remain high, placing in doubt the true impact of these programs [55].

Zidovudine

The findings of the ACTG 076 study, released in February 1994, demonstrated for the first time that the rate of mother-to-child transmission of HIV-1 could be significantly reduced. Women in that study who received zidovudine by mouth for 3–5 months prenatally, intravenously during labor and delivery, and orally to their offspring for 6 weeks post-partum, had a rate of HIV-1 transmission of 7.6% compared with 22.6% for women who received placebo [1,29]. Following the release of these results, recommendations for zidovudine use among pregnant women were published in the United States, and zidovudine became the standard of care for HIV-infected pregnant women [56], and the implementation of these recommendations has resulted in a significant decline in the incidence of pediatric HIV infection [2–5].

As dramatic and encouraging as these results are, a number of issues need to be addressed before zidovudine can be used on a wide scale in Africa. The zidovudine regimen that is recommended for pregnant women is extremely expensive (currently more than US$600/woman [57], although the cost is expected to decline following patent expiration) and it requires trained personnel and appropriate equipment for the administration of the intravenous perfusion. An additional limitation to the intrapartum dosing is that in many settings women present to delivery rooms with advanced labor, and therefore would not benefit from intrapartum dosing [58]. Although zidovudine was well tolerated in the ACTG 076 study, the safety of zidovudine among African women and their offspring who have a higher prevalence of anemia is untested. Recent reports from animal studies of fetal toxicity continue to raise the question of long-term safety of the drug (summary of a meeting of a Panel to Review Studies of Transplacental Toxicity of AZT, Bethesda, Maryland, USA, January 1997). Finally, as opposed to the populations where the ACTG 076 study was carried out (in the United States and France), almost all HIV-infected women in Africa breast-feed their offspring. In view of evidence suggesting that postnatal transmission represents a significant portion of the overall rate of HIV transmission and can occur at any time during breast-feeding [15,16,22,23], it is possible that this transmission w significantly reduce the effectiveness of interventions suc as zidovudine that primarily target the intrapartum perio The long-term follow-up of children enrolled in th ongoing and planned interventional trials will be critic to evaluate the effect that postnatal transmission will hav upon the overall effectiveness of these interventions.

The design of the ACTG 076 trial, which include treatment from the second trimester to 6-wee postpartum, did not allow the determination of whic component of the regimen provided the greate protective effect. However, evidence from other studi suggests that shorter and simpler regimens of zidovudi being evaluated in Africa may also be effective: zidovudi is known to have its maximal effect on lowering vi load within 2 weeks of initiation, while in sever observational studies, women (including those with CI counts below 200 cells/μl) who received antepartum on or antepartum plus intrapartum but no postpartu zidovudine were less likely to transmit HIV to the offspring than women who did not receive any zidovudi [59–63].

Several studies are under way in Africa to evaluate t safety and effectiveness of shorter, simpler antiretrovi regimens (Table 2). Women in these trials generally st the oral study drug at 32–38 weeks gestation and a given more frequent oral doses of the study drug duri labor to mimic the intravenous component of the ACT 076 regimen, while the postnatal study drug is given eith to the mother, the newborn, or neither [64]. Prelimina evidence from these studies suggest that HIV counseli and testing are well accepted, that zidovudine is w tolerated, that drug adherence is better during t prepartum than the intrapartum phase, and that a sh regimen results in a significant reduction in mater plasma viral load [65–69].

Looking beyond these trials, an important concern public health officials is how to implement an interventi on a large scale once it is found to be effective. Desp the fact that it was designed to be as short and there inexpensive as possible, the cost of the short-cou regimens being evaluated remains expensive. Accordi to one economic analysis, instituting a short-cou zidovudine regimen would cost US$20 per pregn woman, with most of that cost representing H counseling and testing, while preventing one infant H infection would cost US$3748 [49].

Non-nucleoside reverse transcriptase inhibito

Several characteristics of non-nucleoside reve transcriptase inhibitors make them potentially suitabl chemotherapeutic agents to prevent mother-to-c transmission of HIV. Agents such as nevirapine are rap absorbed following an oral dose, have a long serum h life, and result in a rapid and pronounced reductio

HIV viral load [70]. However, the rapid development of resistance to these drugs (within 1–2 weeks) limits their usefulness. Furthermore, in non-pregnant populations, nevirapine frequently results in skin rash, while its safety in pregnant women has been evaluated only in small studies [70–72].

An approach that could possibly circumvent the problem of resistance would be to initiate therapy when a woman enters labor, perhaps followed by a dose to the newborn. Although such a regimen would not have a significant impact upon maternal viral load, it could result in measurable serum levels in the newborn child and thereby provide the newborn with pre- and post-exposure prophylaxis. The efficacy of post-exposure prophylaxis in the absence of prenatal antiretroviral therapy has not been evaluated among HIV-infected pregnant women; however, its potential usefulness is suggested by its effectiveness following occupational exposure among health-care workers [73]. This finding suggests that some of the beneficial effect observed in the ACTG 076 trial may have been the result of post-exposure prophylaxis of the newborn.

Combination of antiretrovirals

The treatment of HIV-infected persons has been revolutionized by the use of combinations of newer antiretroviral agents. Such combinations result in a dramatic reduction in plasma viral load, often below the level of detection. It is not known how well combination therapy will be tolerated by pregnant women, nor whether it will be more effective than zidovudine alone in reducing transmission of HIV from mother to child. A multicenter trial sponsored by the Joint United Nations Programme on HIV/AIDS (UNAIDS) evaluating combination therapy of zidovudine and lamivudine (3TC) is under way in several African countries and should provide some of the answers to these questions [64].

Immunization

Based on the observational trials showing that maternal neutralizing antibodies may have a role in protecting against HIV transmission [35,36], several clinical trials are ongoing in the United States and Africa evaluating the effectiveness of hyperimmune anti-HIV immunoglobulin (HIVIG). In the United States, pharmacokinetic evidence from the ACTG 185 study documents that HIVIG crosses the placenta, is well tolerated by both mothers and infants, and does not result in an increase in plasma HIV-1 viral levels [74]. However, in March 1997 this study was stopped because an unexpectedly low transmission rate in both HIVIG and placebo arms (4.7% and 4.8%, respectively) made it unlikely that the study would be able to demonstrate any additional benefit of HIVIG when used concurrently with zidovudine (Pediatric ACTG Protocol 185 Executive Summary, unpublished data, 1997). Remaining questions regarding this intervention include selection of suitable donors, standardization of the preparation, and timing of administration. An additional limitation of this intervention is the high cost of manufacture and the need for an intravenous infusion.

Vaginal disinfection

There is considerable appeal for the use of vaginal disinfection as a public health intervention to reduce mother-to-child transmission of HIV. Because of its simplicity and safety, it could be administered to all women regardless of HIV status and thereby eliminate the need for prenatal HIV counseling and testing. A possible additional benefit could be a reduction in neonatal sepsis. Several compounds including chlorhexidine and benzalkonium chloride effectively inactivate HIV *in vitro*, and chlorhexidine has been found to be safe when evaluated in a large clinical trial in Europe for the prevention of neonatal streptococcal sepsis [75,76].

A simple, chlorhexidine-based intervention to prevent HIV transmission has been evaluated in Malawi, but unfortunately not found to be effective [77]. Among approximately 2000 HIV-infected women in that study who underwent routine manual vaginal cleansing with a cotton swab soaked in 0.25% chlorhexidine solution prior to each vaginal examination, the HIV transmission rates were nearly identical when compared with the rate among women not receiving this intervention (26.9% versus 27.9%). However, among women with more than 4 h between rupture of membranes and delivery, the intervention group had a significantly lower risk of HIV transmission (25.0% versus 39.4%), suggesting that vaginal disinfection hampered ascending HIV infection from the birth canal. In view of this finding and the inherent appeal of this type of intervention, more intensive disinfection using higher concentrations of chlorhexidine or other antiseptic agents should be evaluated. One such approach that is being evaluated in west Africa is the use of vaginal suppositories of benzalkonium chloride initiated in the last few weeks of pregnancy, in the hope of preventing ascending infection occurring during late pregnancy and the intrapartum periods (P. Mselatti, personal communication, 1997).

Vitamin A therapy

Prenatal vitamin A supplementation, which is inexpensive and could be implemented without the need for prenatal HIV testing, has been proposed as an intervention to reduce mother-to-child transmission of HIV and is currently being evaluated in several African countries. If found to be effective in reducing mother-to-child HIV transmission, the implementation of a vitamin A supplementation program may also have beneficial effects on infant mortality. Results from Malawi indicate that children born to vitamin A-deficient HIV-1-infected women have a higher mortality compared with those born to women without vitamin A deficiency [78]. One concern regarding the prenatal use of vitamin A is that the daily administration of more than 10 000 IU vitamin

A is associated with congenital malformations [79]. Currently, several vitamin A supplementation trials are ongoing in Africa (in Malawi, Tanzania, Zimbabwe and South Africa).

Cesarean section

The effectiveness of cesarean section delivery in reducing mother-to-child transmission remains in question despite the reported results from several large studies. In the European Collaborative Study, birth by cesarean section was associated with a 51% reduction in HIV transmission [32]. A similar result was also found in a study carried out in South Africa [80]. However, in a French study no protection was found [81]. Two meta-analyses of published studies show a protective effect for cesarean delivery of 20–35% [82,83]. Presumably these contradictory results can be explained by a lack of control for potential confounders such as elective versus emergency cesarean section, duration of rupture of membranes, and presence of operative complications [19].

A more pertinent question than the effectiveness of cesarean section is its applicability in Africa. Most women currently deliver in settings totally unsuited for surgical interventions due to the lack of equipment and medical supervision. Even in hospital settings where these are available, cesarean sections result in a high rate of maternal mortality. Estimates from Zimbabwe indicate that the maternal morbidity and mortality rates following cesarean section were 14.9% and 1.8%, respectively [84,85]; presumably most of the women in that study were HIV-uninfected. Evidence from Europe documents that maternal morbidity rate following cesarean section may be significantly higher among HIV-infected women [86]. Another barrier to the wide-scale implementation of cesarean section is that abdominal delivery is poorly accepted in some settings in Africa and can lead to avoidance of antenatal care and hospital delivery during subsequent pregnancies. Therefore, even if shown to be an effective intervention in clinical trials performed elsewhere, cesarean section is unlikely to be a widely implemented intervention in Africa.

Interventions to reduce transmission through breast-feeding

In industrialized countries, HIV-seropositive women are counseled to formula-feed their newborns in order to prevent HIV transmission through breast milk. In Africa, because formula-feeding is associated with higher infant mortality due to diarrheal diseases, these women have been counseled to breast-feed their offspring [87]. Now that the risk of postnatal transmission has been more clearly elucidated, newer recommendations have been developed that propose an individualized approach to counseling (UNAIDS: HIV and infant feeding: an interim statement, July 1996; Box I). Using this approach, women are counseled to either breast- or formula-feed their infant based on the background infant mortality rate as well as an assessment of the woman's access to clean water of her ability to purchase and properly prepare in formula. These recommendations also stress importance of accessibility by women to voluntary testing as the foundation of such a counseling prog

Few data exist from Africa regarding the effectiveness formula feeding in preventing postnatal transmissio HIV. In an observational study from South Africa, chil that were formula-fed experienced a lower rate of transmission without an increase in the rate of in morbidity when compared with breast-fed children In Kenya, formula-feeding is being evaluated in context of a randomized clinical trial.

In view of the concerns regarding formula-feed alternatives other than complete replacement of b milk have been proposed to reduce a child's exposu HIV-infected breast milk. These include early wean surrogate breast-feeding, and pasteurization of breast m Early weaning could eliminate the risk of late postn transmission, but the time at which weaning should o is not known since the time of greatest risk of transmission through breast-feeding remains unkno According to a mathematical model, the risk of transmission outweigh the risk of death from diarr disease after 3–7 months breast-feeding [89]. acceptability of early weaning is also unknown, an certain settings this practice may draw untoward atten upon a woman and thereby expose her to a los confidentiality concerning her HIV infection. Of n in the South African trial [88] which was carried ou the absence of organized community support, o supplied formula, one-third of women who w counseled about the risk of postnatal transmission cl to formula-feed their newborns.

Surrogate breast-feeding by an HIV-negative indivi gives the baby the benefit of breast-feeding with exposure to HIV; unfortunately, there are report women who acquired HIV infection from the ba through the process of breast-feeding [90]. Pasteuri breast milk is another option that has been proposed the logistics of expressing and pasteurizing breast mi the home setting have not been examined. There is concern about the safety of storing breast milk in absence of refrigeration and of the loss of immunolog properties of the breast milk following pasteurization

Conclusion

In view of the number of ongoing and plan intervention trials in Africa, it should become clea the next few years whether short-course antiretro therapy, vitamin A supplementation, immunotherap formula-feeding can significantly lower the rat mother-to-child HIV transmission in Africa. Once t studies are completed, and assuming that at least

Box I. Elements for establishing a policy on HIV and infant feeding

Supporting breast-feeding

As a general principle in all populations, irrespective of HIV infection rates, breast-feeding should continue to be protected, promoted and supported.

Improving access to HIV counseling and testing

Access to voluntary and confidential HIV counseling and testing should be facilitated for women and men of reproductive age, in part by ensuring a supportive environment that encourages individuals to be informed and counseled about their HIV status rather one that discourages them out of fear of discrimination or stigmatization.

As part of the counseling process, women and men of reproductive age should be informed of the implications of their HIV status for the health and welfare of their children. Counseling for women who are aware of their HIV status should include the best available information on the benefits of breast-feeding, on the risk of HIV transmission through breast-feeding and on the risks and possible advantages associated with other methods of infant feeding.

Ensuring informed choice

Because both parents have a responsibility for the health and welfare of their children, and because the infant feeding method chosen has health and financial implications for the entire family, mothers and fathers should be encouraged to reach a decision together on this matter. However, it is mothers who are in the best position to decide whether to breast-feed, particularly when they alone know their HIV status and wish to exercise their right to keep that information confidential. It is therefore important that women be empowered to make fully informed decisions about infant feeding, and that they be suitably supported in carrying them out. This should include efforts to promote a hygienic environment, essentially clean water and sanitation, that will minimize health risks when a breast-milk substitute is used.

When children born to women living with HIV can be ensured uninterrupted access to nutritionally adequate breast-milk substitutes that are safely prepared and fed to them, they are at less risk of illness and death if they are not breast-fed. However, when these conditions are not fulfilled, in particular in an environment where infectious diseases and malnutrition are the primary causes of death during infancy, artificial feeding substantially increases childrens' risk of illness and death.

Preventing commercial pressures for artificial feeding

Manufacturers and distributors of products which fall within the scope of the International Code of Marketing of Breast-Milk Substitutes (1981) should be reminded of their responsibilities under the Code and continue to take the necessary action to ensure that their conduct at every level conforms to the principles and aim of the Code.

Part of a Policy Statement developed collaboratively by UNAIDS, the World Health Organization (WHO) and UNICEF: HIV and infant feeding, May 1997.

demonstrates efficacy, public health authorities will be faced with several challenges. Among these will be the need to marshal the resources and political will to implement these new strategies without jeopardizing the level of support for existing HIV prevention efforts. Research will also be needed to evaluate barriers to acceptability of these interventions in a variety of cultural settings. Finally, for interventions that target the intrapartum period, the impact of postnatal transmission on their effectiveness will need to be assessed.

References

1. Connor EM, Sperling RS, Gelder R, *et al.*: **Reduction of maternal–infant transmission of human immunodeficiency virus type 1 with zidovudine treatment.** *N Engl J Med* 1994, **331**:1173–1180.
2. Simonds RJ, Nesheim S, Matheson P, *et al.*: **Declining mother-to-child HIV transmission following perinatal zidovudine recommendations: United States.** *XI International Conference on AIDS.* Vancouver, July 1996 [abstract TuC440].
3. Cooper ER, Nugent RP, Diaz C, *et al.*: **After AIDS clinical trial 076: the changing pattern of zidovudine use during pregnancy, and subsequent reduction in the vertical transmission of human immunodeficiency virus in a cohort of infected women and their infants.** *J Infect Dis* 1996, **174**:1207–1211.
4. Fiscus SA, Adimora AA, Schoenbach VJ, *et al.*: **Perinatal HIV infection and the effect of zidovudine therapy on transmission in rural and urban counties.** *JAMA* 1996, **275**:1483–1488.
5. Blanche S, Mayaux MJ, Mandelbrot L, Rouzioux, Delfraissy JF: **Acceptability and impact of zidovudine prevention on mother to child HIV-1 transmission in France.** *IV Conference on Retroviruses and Opportunistic Infections.* Washington DC, January 1997 [abstract 380].
6. UNAIDS: *The HIV/AIDS Situation in mid-1996. Global and Regional Highlights. Fact sheet 1.* Geneva: Joint United Nations Programme on HIV/AIDS; 1996.
7. Quinn TC: **Global burden of the HIV pandemic.** *Lancet* 1996, **348**:99–106.
8. Dabis F, Msellati M, Dunn D, *et al.*: **Estimating the rate of mother-to-child transmission of HIV. Report of a workshop on methodological issues.** *AIDS* 1993, **7**:1139–1148.
9. The working group on mother-to-child transmission of HIV: **Rates of mother-to-child transmission of HIV-1 in Africa, America, and Europe: results from 13 perinatal studies.** *J Acquir Immune Defic Syndr* 1995, **8**:506–510.

3

MATERIAL ON HIV/AIDS

SENT BY

MEDICAL MISSION INSTITUTE

UNIT FOR HEALTH SERVICES AND HIV/AIDS

SALVATORSTR. 22

D-97074 WÜRZBURG

GERMANY

ACG

AIDS COORDINATION GROUP/BUREAU
The Netherlands

PREVENTION OF PERINATAL HIV TRANSMISSION
Discussion paper

March 1998

The AIDS Coordination Group is an informal consortium of Dutch development assistance agencies/NGOs. Members:

Bilance

Hivos

Royal Tropical Institute

Medical Coordination Secretariat/ICCO

Memisa Medicus Mundi

Netherlands Red Cross Society

AIDS Coordination Bureau
c/o Royal Tropical Institute
Mauritskade 63
P.O. Box 95001
1090 HA Amsterdam
The Netherlands

Telephone:
31-20-5688-428
Fax:
31-20-665-4423
E-mail:acb@kit.nl

This paper reflects discussions held by the AIDS Coordination Group concerning measures to prevent perinatal HIV transmission in developing countries. It begins with a brief review of relevant information and measures which have been/are being taken, notes outstanding questions and concludes with recommendations which the Group will use as a policy guideline in their work with counterparts in developing countries.
The contribution of Kees Boer (Academic Medical Centre, Amsterdam) is gratefully acknowledged; the paper was written by Maria de Bruyn (Royal Tropical Institute).

Introduction

UNAIDS estimates that, since the beginning of the HIV/AIDS epidemic, approximately 2.7 million children (aged 0-14 years) have died of AIDS. According to UNAIDS, 1000 children worldwide are currently infected daily with HIV, 90% of whom acquire the virus from their mothers [1]. In 1997 they stated that:

- 1.1 million children were living with HIV/AIDS
- 590,000 children were newly infected that year
- 460,000 children had died in that year.

Infection rates among pregnant women in many African countries remain high (e.g., 43% in Francistown, Botswana in 1997; 32% in Harare in 1995 and 59% in Beit Bridge in 1996, Zimbabwe). Rates in Asia and Latin America are much lower in comparison (e.g., 2.4-4% in India; 2% in Myanmar; 3% in Porto Allegre, Brazil; 8% in the Dominican Republic). The rates among young mothers are especially alarming:

- 13% of pregnant teenagers aged 15-19 years in South Africa (1996)
- 28% of pregnant teenagers aged 15-19 years in Botswana (1997)
- 3.5% of pregnant teenagers in Maharashtra state, India (1997).

In many cases, the women involved may be unaware of their positive HIV status. In a Kenyan city, for example, only one of 63 randomly-chosen women who tested HIV-positive knew that she was infected.

The consequences are seen at both the macro and micro levels. Gains made in infant and child survival are being threatened. By 2010, the infant mortality rate in Zimbabwe is expected to rise by 138% due to AIDS; the under-five mortality rate by 109%. In Côte d'Ivoire, child mortality is expected to increase by two-thirds.

Women living with HIV/AIDS suffer an enormous psychological and emotional burden in having to deal with the infection of their offspring. For those who are already ill themselves, the daily care of sick children forms an even greater challenge. The number of orphans (both HIV-positive and -negative) due to HIV/AIDS continues to increase; reports of children who are abandoned continue as well.

It is obvious that methods to prevent perinatal transmission of HIV - during pregnancy, childbirth and the postnatal period - are urgently required. Increasing attention has indeed been given to this; the explicit objective is to prevent HIV infection of children. An oftentimes implicit value judgement that accompanies the objective - perhaps more often in industrialized than developing countries - is that people living with HIV/AIDS (PHAs) who choose to have children are at best irresponsible, at worst egotistical or knowingly engaging in harm.

Partly due to the input of PHA associations, counselling guidelines now usually indicate that women living with HIV should receive comprehensive information on the risks of perinatal transmission so that they can make fully informed decisions regarding pregnancy. It would not be amiss to assume, however, that many counsellors - like members of the general population - are of the opinion that women living with HIV should not become pregnant. What has been particularly noteworthy in the published debate on measures to reduce perinatal transmission (both in journals/newsletters and on the Internet) is the largely absent contribution of PHAs themselves.

Mechanisms of perinatal transmission

Research on the mechanisms of HIV infection during pregnancy is thus far inconclusive [2-5]; it is in any event clear that it is a multi-factoral process involving genetic, viral and clinical factors.

Some studies have suggested that certain geno- and phenotypes of HIV-1 are more prone to perinatal transmission. There is also an increased risk in the case of high viral load in the maternal blood (e.g., when seroconversion takes place late in pregnancy or the mother has advanced AIDS).

HIV-1 has been shown in placental cells at 8 weeks' gestation and in foetal tissue specimens from the first trimester of pregnancy. The European Collaborative Study provided evidence that the risk of vertical transmission was increased in very premature infants (< 34 weeks, perhaps because the infant has received fewer antibodies through the placenta).

After about 35 weeks' gestation in the European study, the transmission rate remained stable, leading to the suggestion that most infants acquire HIV during delivery in non-breastfeeding populations. Despite this, some researchers have suggested that about half of transmission occurs late in pregnancy. It has been pointed out, however, that the data supporting this assumption apply to live births; if early transmission contributes to foetal loss, early in-utero transmission could be higher.

There is some evidence that STD infection during pregnancy could heighten the transmission risk, e.g., syphilis infection may double it.

Invasive procedures during pregnancy and delivery - amniocentesis, episiotomies, use of forceps - have been speculated to affect vertical transmission but the evidence is equivocal. Transmission during childbirth may occur in different ways: mixing of maternal and foetal blood during contractions and contamination through mucuous membranes are two. Swallowing by the foetus of maternal blood or cervico-vaginal secretions during passage through the birth canal is a possible third mechanism; the absence of an acid environment in the newborn's stomach may allow HIV to retain its infectivity.

The International Twin Study showed that infection risks were higher among first-born than second-born twins, perhaps because of greater exposure to vaginal secretions and longer, more traumatic labour [6].

Premature membrane rupture may lead to invasion by HIV of the amniotic cavity. A prospective study in the USA of 525 women showed that transmission risks were raised when membranes ruptured more than four hours before delivery [7]. The European study showed no association between HIV transmission and length of time from membrane rupture to delivery; CD4 cell counts may play a role in this respect.

HIV-1 has been found both in cell-free fractions and lymphocytes of breast milk; the colostrum particularly may have a higher concentration of virus [8]. Transmission of the virus through breast milk may be increased if mothers have just seroconverted, have sores or cracks around the nipples, and if the child is teething or has some oral pathology. A 1992 meta-analysis of six studies, including one from Africa, indicated that the contribution of breastfeeding to perinatal transmission is 14%; in three African studies, 4-9% of infants were infected after 3 months of age, presumably through breastfeeding [9].

Initial prevention measures

What was originally done in the developing countries to prevent perinatal HIV transmission?

The first step was to ***inform people*** through general information campaigns ***about the possibility of mother-to-child transmission***, e.g., through posters and brochures. It was hoped that this information would help influence people to prevent their own - and thereby their children's - infections.

When HIV or AIDS was diagnosed in women - often as the result of a seriously ill newborn child - the mothers received ***advice not to have any more children and to inform their partners about their serostatus***. It was soon recognized that such advice was useless or could even have adverse consequences. Many women preferred not to tell their partners (and family members) about their serostatus in order to avoid accusations of blame, stigmatization, violence and abandonment.

It was further recognized that women in many places could be offered little in the way of support or additional care. Education regarding HIV transmission via breastfeeding was often not provided - following the advice of WHO and other organizations - because ***it was assumed that breastfeeding was a better alternative than bottle-feeding.*** Even as late as 1996, WHO maintained: "As a general principle, in all populations, irrespective of HIV infection rates, breast-feeding should continue to be protected, promoted and supported....in particular in an environment where infectious diseases and malnutrition are the primary causes of death during infancy, artificial feeding substantially increases children's risk of illness and death" [10].

In the early years - and sometimes even today - pregnant women living with HIV were asked or encouraged to consider an ***abortion***. Reports that the women felt pressured to acquiesce were not rare; an example from Thailand [11]:

> "It all happened with my first pregnancy when I had a blood test. The nurse asked me some questions and finally told me I was infected with the HIV virus...I brought my husband in for testing and he tested HIV-positive...I remember crying when both of us sat in front of the nurse. She asked us what we wanted to do with our unborn child. She suggested aborting the child and added that it would be free of charge. If I agreed to do so, I was also required to have a hysterectomy.
>
> "I talked to my husband and we both agreed to have an ultrasound to see if our child was healthy. The technician said the child was healthy and strong. Then she looked at my HIV status and suddenly replied: 'No, no you cannot keep the child'; her voice was so threatening. 'You must abort the child', she insisted.
>
> "My husband said it is probably better to abort the child, letting go now was better than losing it when the child grew and became as lovely as our dreams. I was not sure myself but was in a state of shock. I asked the nurse if I could have a sterilization that was reversible. She looked at me with surprise and asked if I still had hope for a cure. On the form there was only a hysterectomy so she wrote that I wished not to have a permanent sterilization operation.
>
> "I had my child aborted, with a special deal: abortion with sterilization – free of charge. But I still don't know what kind of sterilization I got. I am not sure if it is a reversible or permanent sterilization. I have no way of knowing what has been done to my own body."

With the advent of counselling centres/services and self-help groups, more efforts were undertaken to educate women living with HIV about pregnancy. They were informed about the risks of perinatal transmission, usually with the intention to encourage them to use ***birth control methods***.

As an increasing number of pregnant women turned out to be HIV-positive, health workers began using procedures to reduce transmission during childbirth. In industrialized countries, attention was given to ***caesarian sections***. In Switzerland, for example, some obstetric centres began offering this option as early as 1985 [12]. An analysis of European studies showed a small protective effect of caesarian sections but it has been noted that the validity of the analysis was compromised by methodological differences between the studies and an inability to distinguish between elective and emergency procedures.[1] In developing countries, recommendations were made to avoid the procedure given possible dangers when it is carried out in often less than optimal prevailing conditions; one study from Rwanda showed that none of 10 HIV-negative women suffered post-operative complications while 3 of 20 HIV-positive women died within 72 hours due to surgical complications [13].

Attempts were further made to ***avoid insofar as possible invasive procedures*** such as induced membrane rupture, vacuum suction and episiotomies. In Malawi, the use of ***birth-canal washing with vaginal antiseptics (chlorhexidine)*** was studied; the intervention may have lowered transmission risk for babies born to mothers whose membranes were ruptured more than 4 hours prior to delivery [14].[2]

Current measures

Abortion

According to the International Community of Women Living with HIV/AIDS, in some countries (e.g., Thailand) HIV-positive women are still being pressured to terminate their pregnancies, even if abortion is illegal [15]. On the other hand, advocates argue that women who freely choose to have an abortion should be enabled to do so safely. In some countries where abortion is illegal, "menstrual regulation" procedures offer an option [16].

Zidovudine administration during pregnancy and childbirth

A measure currently receiving great attention is administration of zidovudine (ZDV) to pregnant women living with HIV. Trials in France and the USA in 1994 showed that

---

[1] A European study is currently being carried out in which different modes of delivery will be assessed among women who accept or reject antiretroviral prophylaxis [12].

[2] A presentation at the XI International Conference on AIDS in Vancouver, Canada (July 1996) stated that, although birth canal washing in Malawi had not yet shown a significant impact on HIV transmission, it did reduce infant and maternal morbidity and mortality; ***The effect of birth canal disinfection on HIV perinatal transmission and post-partum outcomes, Taha, T., Johns Hopkins University, USA***

ZDV can reduce the rate of perinatal transmission to 5-10%. The regimen followed, called ACTG 076, costs about US$ 800-1000 if the full course of treatment is given to the pregnant woman and her newborn; it is administered over many weeks during pregnancy and delivery (orally during pregnancy and intravenously during delivery) and also to the newborn child who is not breastfed. With the advent of triple therapy (two nucleoside analogues, such as ZDV, and a protease inhibitor), ZDV monotherapy is becoming less common in industrialized countries.

Studies were subsequently supported by UNAIDS in South Africa, Tanzania and Uganda to compare ZDV administration to no treatment at all or a placebo to find a less expensive treatment [17]. The studies employ a short-term regimen based on the following considerations:

1) women in developing countries only attend prenatal clinics very late in pregnancy, too late to receive the ACTG 076 regimen
2) there are often no intravenous facilities at delivery sites (required for the original regimen)
3) women cannot make frequent visits to clinics to receive treatment for their infants in the six weeks following birth
4) there are insufficient resources for both the women themselves and for their governments to buy the ZDV needed for the full regimen.

Similar studies were (or are being) conducted in other countries (e.g., Côte d'Ivoire, Dominican Republic, Ethiopia). UNAIDS stresses that the women participating in the trials have signed a form giving their informed consent, are counselled about HIV infection and prevention measures, and are fully informed about how the trial is being conducted. Some question, however, whether trial participants truly understand what a placebo is. In Côte d'Ivoire, one woman who participated did not know a year later whether she had received ZDV or a placebo; she said: "They gave me a bunch of pills to take, and told me how to take them. Some were for malaria, some were for fevers, and some were supposed to be for the virus. I knew that there were different kinds, but I figured that if one of them didn't work against AIDS, then one of the other ones would" [18].

These ZDV trials in developing countries have aroused a great deal of debate since Lurie and Wolfe criticized them, saying that the placebo part of the trials was unethical; in their view, equivalency trials [comparing different regimens of short-term ZDV] "will provide even more useful results than placebo-controlled trials, without the deaths of hundred of newborns that are inevitable if placebo groups are used" [19].

UNAIDS responded that African realities, including poverty and deteriorating health systems, make the ACTG 076 treatment unfeasible there; placebo-controlled trials can help evaluate whether shorter regimens, that can be realistically implemented, are better than no treatment at all. Researchers at Makerere University Medical School, in Kampala, also replied: "...in Uganda, the government health expenditure is $3 per person per year, and the average citizen makes less than $1 per day. We think it is unethical to impose expensive treatment protocols [comparing different regimens instead of one regimen and placebos] that could never be used here....We are worried that AZT will exacerbate anemia in women and infants here. If we are to find out whether the new treatments are safe, the best way is to compare them with a placebo" [20]. Other researchers continued the debate, commenting on whether or not equivalency trials would be feasible; the opinions varied [21-23].

In early 1998, the results of a placebo-controlled study in Thailand were released. The women received ZDV from 36 weeks' gestation until the onset of labour and then

every 3 hours until delivery. The infants did not receive the drug but were not breastfed either. The study indicated that the risk of perinatal transmission was reduced by about 50% [24]. The placebo arms of various trials were thereafter suspended and UNAIDS announced that it was working with UNICEF on implementation plans in 10 developing countries "in anticipation of applicable interventions resulting from the trials" [23, 25].

Nevertheless, questions remain:

- Do the trials consider that ZDV administration during the third trimester of pregnancy may not prevent perinatal transmission if this is occurring earlier during pregnancy?
- If women receive ZDV during pregnancy, do they risk resistance to future antiretroviral therapies that might become available in future? (This is perhaps not so relevant for women in Africa and Asia but in some Latin American countries measures are being taken to ensure that all PHAs get access to antiretroviral drugs.)
- What is being done regarding research on the possible effects of ZDV administration to the infants involved? In January 1997, women's health activists in the US raised questions concerning a National Cancer Institute study that showed ZDV may cause liver, lung, skin and vaginal cancers in the children of mothers who received it during pregnancy [26].
- If the ZDV-pregnancy intervention is implemented in developing countries, will it also be possible to train all physicians and midwives in voluntary counselling and testing and will the health-care infrastructure be able to handle such an intervention in terms of manpower, cost and logistics?
- What is being done to address the problems trial participants may face in telling their partners about their HIV status? In the Côte d'Ivoire study, 20% of women refused to be tested, 50% of those tested did not return for their results and 50% of those tested positive did not inform their partners of the result [27].

Perhaps the most crucial question related to short-term ZDV administration concerns its availability if it is successful in reducing transmission. Will all pregnant women in the trial countries (let alone all other developing countries) be given access to it? An observer from Zimbabwe has noted: "I think if these trials succeed in bringing the cost of treating AIDS patients down to one-tenth of the current costs, say $80-100, the African patient and citizen making less than $1 a day can still not afford the treatment. Neither will his government, spending less than $3 on health per person per year, be in a position to provide the required support to correctly administer the drug. Rather, the new regimen will be affordable to the patient in America or Europe, where an AZT drug trial, if it includes a placebo group, will not be tolerated" [28].

A similar observation: "...the per-capita expenditure for health care in Malawi, for example, is just over $1. Given this fact, Malawi (or some other funder) must make realistic assurances that if research proves that $200 worth of zidovudine is effective in reducing mother-to-infant transmission of HIV, resources will be made available so that the women of Malawi will receive this regimen. If they will not receive the regimen, then no such research on this population would be ethical....To use a population as research subjects because of its poverty and inability to obtain care, and then not to use that knowledge for the direct benefit of that population, is the very definition of exploitation" [29].

Those carrying out the research have addressed this concern as follows: "We believe that much of the debate in the past few months is the result of an unrecognized confusion about the role of clinical research in a public health crisis. Although clinical research may be justified by such a crisis and is indeed expected to contribute to its

solution, it is not in itself the solution. Research in developing countries proved years ago that vitamin A supplementation could decrease infant mortality by 30 percent and that a vaccine could prevent the perinatal transmission of hepatitis B, and yet, these lifesaving, cost-effective, public health interventions are still not available in the countries that need them most. No one can guarantee that the discovery of an effective, easier-to-use, more affordable method to prevent perinatal HIV will lead to its widespread application" [30].

In March 1998, it was announced that Glaxo Wellcome, the patent-holder for ZDV, was reducing the drug's price by as much as 75% for pregnant women living with HIV/AIDS in developing countries [31]. The company would negotiate prices "depending on the country's economic situation", charging between $50-150 for the short-course regimen [32].[3] WHO added ZDV for mother-to-child transmission to their Essential Drug List [33].

Nevertheless, the Ugandan National AIDS Programme manager, Dr Elizabeth Madraa, commented: "We thought they would go beyond that. Who is supposed to subsidize the rest of the cost" [34]. Another comment raised was that: "The cost per case must include the cost of screening all pregnant women to identify the HIV-positive women and the costs of treating all HIV-positive pregnant women who would not have transmitted the virus to their babies (over 80% in the Thailand study) and the cost of counselling for all of the HIV-positive pregnant mothers and the cost of forumular for the babies born to the HIV-positive mothers. In countries where STDs and tuberculosis are not adequately treated, the idea of starting a national maternal HIV screening and treatment program is mind-boggling" [35].

In some developing countries with relatively substantial economic resources and/or external aid, the drug may be made available, at least to selected groups of women. NGOs may also step into the breach. In Thailand, for example, the Red Cross Society started a programme in 1996 to collect donations from the general public for procuring ZDV for poor pregnant women living with HIV; the Ministry of Public Health has supplemented the funds so that, up to September 1997, 1040 women at 57 government hospitals had received the drug [36].

Vitamin A supplementation

Vitamin A plays a role in maintaining the body's barriers to infections, both in pregnant women and their infants. A few studies (e.g., in Malawi) have linked low vitamin-A levels in HIV-positive mothers to increased perinatal transmission; others (e.g., in the US) have shown no association. Trials are being carried out in Malawi, South Africa, Tanzania and Zimbabwe to determine whether vitamin A supplementation with inexpensive tablets might reduce vertical transmission [cf 37]. If such an intervention proves successful, it will need to be carried out with caution since too high doses may be teratogenic.

---

[3] It has been reported that the US Supreme Court has denied challenges to US patents assigned to Glaxo Wellcome for ZDV; on the other hand, a company in India is producing ZDV under the brandname ZIDOVIR at half the price of the Glaxo brand; *AZT trial: good news!!! (for Glaxo Welcome)*, Thomas, J., 26 February 1998 and Gilada, I.S., 5 March 1998, SEA-AIDS e-mail list

Modification of breastfeeding practices

As mentioned above, colostrum seems to contain high levels of HIV; two studies have also indicated that there may be an association between the duration of breastfeeding and vertical transmission [38]. A study from South Africa also postulated that exclusive breastfeeding by HIV-positive women may not provide the protective effect for infants against childhood illnesses that is used as an argument for promoting breastfeeding [39]. Modifying current breastfeeding practices may therefore reduce mother-to-child transmission. Foster has summarized some of the possibilities [40]:

- Heat treatment of colostrum to destroy HIV or providing artificial milk to newborns for the first few days of life
- Limiting breastfeeding to the first few months; weaning foods might be introduced in the second or third months to reduce the frequency and duration of breastfeeds
- Encouragement of breastmilk substitutes:
  - instruction in formula milk reconstitution and bottle sterilization
  - adoption of cup-and-spoon feeding
  - use of cows' milk that has been diluted, sweetened and boiled
  - use of traditional breastmilk alternatives (e.g., paps based on groundnuts in Zambia, sorghum in Zimbabwe and beans in India are being given to hungry orphaned babies cared for by poor relatives).

In December 1997, UNAIDS made the following statement on breastfeeding and HIV/AIDS:

> "The Joint United Nations Programme on HIV/AIDS (UNAIDS) now encourages as much information as possible on the relative risks of breastfeeding and infant formula feeding to be made available to HIV-positive mothers, requiring that they be tested, to enable them to decide for themselves whether to breastfeed or not. In most poor countries, however, most women still are not provided with sufficient information and support to make an informed choice.
>
> UNAIDS encourages countries to make voluntary testing and counselling more widely available so that women can find out if they are HIV-positive and thus make more informed choices on issues such as breastfeeding."

Again, such measures need to be placed in context. Organizations that have long combated aggressive marketing by infant-formula manufacturers fear that promotion of formula-feeding by HIV-positive mothers will undermine the gains made through adoption of *The International Code of Marketing of Breast-milk Substitutes* in 1981.

Curtis of the BMA Foundation for AIDS has remarked: "The formula manufacturers are 'itching' to get some kind of international public health endorsement for advertising based on the message that formula-feeding will save babies from AIDS....Once public health officials allow infant formula manufacturers to make anti-AIDS health claims, you can be sure that the message they put out will not be properly hedged around with cautions about the need for good hygiene and the unsuitability of formula-feeding if this is not feasible....the overall message will come across that breastfeeding causes AIDS, so caring mothers should avoid it" [41]. Baby-food manufacturers suggested in July 1997 that they were giving mothers free supplies in Thailand as part of a government programme for infants of women living with HIV; however, more than 25% of mothers received free samples while only 2% were registered as HIV-positive [42].

Two factors make the use of formula-feeding by HIV-positive women difficult: a lack of access to clean water and hygienic conditions for formula preparation, and the

expense involved. In Zambia, for example, the least expensive 1-kg tin of formula costs about US$ 9 and lasts a week at most, while the average family income is less than US$ 100/month [43]. Mothers participating in a trial in Haiti noted that formula feeding would require many resources: bottles, nipples, equipment and fuel for sterilization and a baby crib (since bottle-fed infants should sleep separately from mothers to avoid breastfeeds during the night) [44]. Calls are consequently being made to make generic formulae available as well as providing needy mothers with free supplies [43, 45].

Unforeseen consequences must further be taken into account, e.g., breaches of women's confidentiality. In communities where breastfeeding is the norm and a woman chooses not to breastfeed, unwanted questions (from her viewpoint) may arise or people may simply assume that she is HIV-positive. This could lead to stigmatization and discrimination. A strategy to help avoid this was used in Haiti, where a clinic with a neutral name (Breastfeeding Clinic) carrying out AIDS studies also treated some HIV-negative mothers and infants [44]. On the other hand, some view promotion of formula feeding by HIV-positive mothers as a step towards "normalizing" HIV infection, especially in places where high HIV prevalence exists.

The context can also be viewed in another way. Frerichs posited that it is a question of the rights of the mother versus the rights of the child. In his view, UNAIDS' position that HIV-positive mothers have the right to decide whether or not to breastfeed "does not imply that the child has a right to avoid virus-laden breast milk, or that the father has the right to participate in a decision that may affect the welfare of his child. Instead, it is the right of the mother to keep her HIV status confidential that is given the higher consideration" [46]. Other correspondants responded [47]:

- "I think that the bulk of this mother-child rights dilemma arises from the fact that the child and mother are inextricably linked for the child's first few years of life in most of the countries we work in, due to societal structures, mores, etc. Most infants in these areas cannot survive without their mothers....the women in many of the countries we speak of are best equipped to make the decision of what is best for the welfare of their child. Sometimes the values do not make sense to us and our cultural standards, but in other societies, they're doing as much as they can with the little resources that are available."
- "The rights dilemma raises questions about the role (and resources needed) of all involved in public health and other disciplines in raising awareness regarding HIV/AIDS and gender equity. Until there is a recognition that sexual behaviour is NOT just a woman's responsibility but a shared one between men and women, and until women have respect from their families and society, women will always be blamed/beaten/abused/...when they are HIV-positive or indeed have any other problem."
- "High risk of infection of the child through breastfeeding may be limited to the mother getting infected during late pregnancy or after delivery or when in the final stage of the silent period or during clinical AIDS."

Antenatal clinic testing

In some countries, antenatal clinic testing is already mandatory (Chile, Malaysia, USA). Bennett questions the rationale behind this: "If proponants of mandatory testing are aiming to ensure that as many HIV-positive women as possible accept ZDV prenatally, then unless we are prepared to introduce mandatory treatment of these individuals, there seems no clear indication that the uptake of treatments would be greater than

those resulting from, say, a programme of mandatory HIV counselling with an option to be tested" [48].

UNAIDS, a European Study Group on antenatal HIV testing and others are promoting increased availability of voluntary counselling and testing facilities for antenatal clinic attenders rather than mandatory testing. The benefits for the mother and child must be clear, however, as stated in the European consensus document: "...antenatal HIV testing should be positively recommended, in the interests not only of the baby but also of the symptomless woman...The right of a woman to refuse testing, intervention, and drug therapy should also be enshrined...Models of care providing for HIV infected individuals and family have to precede a testing policy" [49].

To achieve this prerequisite, governments and NGOs supporting health-care programmes will need to create the political will to sustain such care over the long term, taking into account the costs involved. A cost-benefit analysis weighing the advantages of promoting HIV-specific measures against improving antenatal, postnatal and mother-child care in general should certainly be part of this process.

Discussion and recommendations

Boer remarked that - although no studies have yet investigated this - it is unlikely that pregnant HIV-positive women receiving short-term ZDV will suffer significant side-effects. Nevertheless, it would be valuable to study the possibility of using other medications instead. One candidate could be nevirapine, which can lower the viral load within 4 hours. If it were possible to administer this drug just before delivery, with administration of the equivalent of one tablet to the infant thereafter, a less expensive prevention method would become available with fewer chances of side-effects.

Another participant noted that as more measures become available to prevent mother-to-child transmission, we may see an increase in the number of children born to women living with HIV.[4] This would once again raise the question of what value judgements are made in programmes regarding the reproductive rights of PHAs and how programmes should plan for coping with a possibly higher number of orphans in future.

Recommendations

1. Continued attention should be given to instructing health workers on ways to decrease risks during delivery, especially simple measures such as immediately cleaning the infant's head and mouth (given the possibility of transmission through gastric juices).
2. Studies should be supported on the cost-benefits of the various prevention measures. Research on lower-cost interventions should receive extra support (e.g., vaginal lavage with efforts to find agents that adhere better to the vaginal wall).
3. Voluntary - rather than mandatory - counselling and testing for couples (wherever possible) should be promoted but only in cases where the mother and child can truly be offered access to effective measures. This implies, for example, making

[4] An e-mail correspondant remarked that he had heard reports from Australia that many HIV-positive women there were now deciding to have children because of the reduced risks to the babies [50].

WHO/GPA/DIR/95.3
COMMUNITY HEALTH
LIBRARY
AND

formula-feeding available and affordable with comprehensive education and counselling.

4. Donor NGOs should increase their efforts to support overall improvements of ante- and postnatal care for all women, given that many women are unaware of (or have no possibility of discovering) their HIV status.
5. Efforts to prevent HIV transmission in general should be intensified by offering women access to more prevention tools (e.g., sex education, the female condom, STD treatment).
6. All programmes aiming to prevent perinatal transmission should not only consider the rights of the child but also those of the mother; women should not be seen as "vectors of transmission" but as persons entitled to adequate health care and services.

References

1. *Report on the global HIV/AIDS epidemic: December 1997,* Geneva: UNAIDS
2. Paediatric HIV infection. Scarlatti, G., *Lancet,* 1996, 348: 863-868.
3. Perinatal HIV-1 transmission: recent advances and therapeutic interventions. Bryson, Y., *AIDS,* 1996, 10(suppl 3): S33-S42
4. Vertical transmission of HIV-1: maternal immune status and obstetric factors. The European Collaborative Study, *AIDS,* 1996, 10/14: 1675-1681
5. Breastfeeding, genetic, obstetric and other risk factors associated with mother-to-child transmission of HIV-1 in Sao Paulo State, Brazil. Tess, B.H. et al., *AIDS,* 1998, 12/5: 513-520
6. Timing and associated factors of perinatal HIV transmission. Lailemant, M., *Proceedings of an International Symposium on Pediatric AIDS in Thailand: A Public Health and Social Dilemma,* February 1995
7. Obstetrical factors and the transmission of human immunodeficiency virus type 2 from mother to child. Landesman, S.H. et al., *New Engl. J. Med.,* 1996, 334/25: 1617-1623
8. Transmission of HIV-1 in breast milk. Broadhead, R.L., *Tropical Doctor,* 1996, 26: 100-101
9. Review of current research on breast milk and mother to infant transmission of HIV. Lyall, E.G.H., in: *Breastfeeding and HIV transmission,* London: UK NGO AIDS Consortium, 1998, pp. 1-6
10. HIV and infant feeding: an interim statement. *Safe Motherhood Newsletter,* 1996, 3/2: 11
11. *Living with HIV.* Apisuk, C. and Apisuk, N., eds, Nontburi: NAAM-CHEWIT Project, 1994, p. 6
12. Prevention of vertical HIV transmission: additive protective effect of elective Cesarean section and zidovudine prophylaxis. Kind, C. et al., *AIDS,* 1998, 12/2: 205-210
13. Fatal complications after Cesarian section in HIV-infected women. Bulterys, M. et al., *AIDS,* 1996, 10/8: 923-924
14. Perinatal intervention trial in Africa: effect of a birth canal cleansing intervention to prevent HIV transmission. Biggar, R.J. et al., *Lancet,* 1996, 347: 1647-1650
15. Perinatal HIV transmission and children affected by HIV/AIDS: concepts and issues. Manchester, J., *AIDS/STD Health Promotion Exchange,* 1997, 4: 1-4

16. Preventing HIV transmission during pregnancy and delivery: a review. Sherr, L., *AIDS/STD Health Promotion Exchange*, 1997, 4: 4-6
17. *Breastfeeding and HIV/AIDS.* Children Living in a World with AIDS World AIDS Campaign, Geneva: UNAIDS, December 1997
18. Use of placebos in Ivory Coast AIDS test sparks ethics debate in U.S. French, H.W., *New York Times*, 9 October 1997
19. Unethical trials of interventions to reduce perinatal transmission of the human immunodeficiency virus in developing countries. Lurie, P. and Wolfe, S.M., *New Engl. J. Med.*, 1997, 337/12: 853-856
20. A look at...ethics and AIDS: a reaction: we're trying to help our sickest people, not exploit them. Bagenda, D. and Musoke-Mudido, P., *The Washington Post*, 28 September 1997, p. C03
21. *Trials of AZT in Africa.* Curtis, H., BMA Foundation for AIDS, 14 May 1997, PROCAARE e-mail list
22. *Trials of AZT in African countries.* Fowler, M.G., NIAID/NIH, 21 May 1997, PROCAARE e-mail list
23. Ethics of placebo-controlled trials of zidovudine to prevent the perinatal transmission of HIV in the Third World: correspondence. Merson, M.H. et al., *New Engl. J. Med.*, 1998, 338/12: 836-841
24. *Synopsis of Bangkok short-course perinatal ZDV trial.* Mastro, T., Director HIV/AIDS Collaboration Thailand, PROCAARE e-mail list, 27 February 1998
25. *Controversial part of AIDS trials dropped.* Reuters, 23 October 1997
26. *Trials of AZT in African countries.* Smith, A., CAFOD, 13 May 1997, PROCAARE e-mail list
27. Tackling mother-to-child HIV in Côte d'Ivoire. Feinmann, J., *Lancet*, 1997, 350: 1084
28. *AZT trials in developing countries.* Tomori, O., 13 October 1997, PROCAARE e-mail list
29. Glantz, L.H. and Grodin, M.A. in [22].
30. Lallemant, M. et al. in [22].
31. AZT price cut for Third World Mothers-to-be. Waldholz, M., *Wall Street Journal*, 5 March 1998, p. B1
32. *More on AZT price break.* Abubakar, A., 9 March 1998, PROCAARE e-mail list
33. *Prevention of HIV transmission from mother-to-child: meeting on planning for programme implementation.* Geneva: UNAIDS, 23-24 March 1998
34. *AIDS drugs still too expensive.* Kagambirwe, K. and Barenzi, L., Africa News Service, 9 March 1998; PROCAARE e-mail list
35. *Re: AZT price break.* Laing, R., Boston University School of Public Health, 11 March 1998, PROCAARE e-mail list
36. Ethical issues in studies in Thailand of the vertical transmission of HIV. Phanuphak, P., *New Engl. J. Med.*, 1998, 338/12: 834-835
37. Vitamin A. Montreal Gazette, *AIDS Newsletter*, 1997, 12/4-5: 13
38. Breastfeeding and vertical transmission of HIV-1. Kreiss, J., *Acta Paediatr.*, 1997, 86 Suppl/421: 113-117
39. Breastfeeding by HIV-1-infected women and outcome in their infants: a cohort study from Durban, South Africa. Bobat, R. et al., *AIDS*, 1997, 11/13: 1627-1633
40. Realistic alternatives to breastfeeding in the HIV/AIDS era. Foster, G., *AIDS/STD Health Promotion Exchange*, 1997/4: 9-11
41. *Breastfeeding and HIV?* Curtis, H., 15 May 1997, GENDER-AIDS e-mail list

42. Implications for commercial exploitation. Rundall, P., in: *Breastfeeding and HIV transmission,* London: UK NGO AIDS Consortium, 1998, pp. 9-11
43. HIV and breastfeeding: reigniting an old controversy. Geloo, Z., *Women's International Net Magazine* (http://www.geocities.com/Wellesley/3321/win6d.-htm)
44. Cultural feasibility studies in preparation for clinical trials to reduce maternal-infant HIV transmission in Haiti. Coreil, J. et al., *AIDS Ed. Prev.,* 1998, 10/1: 46-62
45. Implications for regional health policy and practice in developing countries. Ray, S., in: *Breastfeeding and HIV transmission,* London: UK NGO AIDS Consortium, 1998, pp. 13-14
46. *Rights of the mother versus rights of the child,* Frerichs, R., 11 February 1997, SEA-AIDS e-mail list
47. *Rights of the mother versus rights of the child,* Zlidar, V., 13 February 1997; Smith, M., 19 February 1997; Kok, P., 19 February 1997, SEA-AIDS e-mail list
48. Mandatory testing of pregnant women and newborns: a necessary evil? Bennett, R., *AIDS/STD Health Promotion Exchange,* 1997, 4: 7-8
49. Antenatal HIV testing in Europe. Hudson, C.N. and Sherr, L., *Lancet,* 1997, 350: 1783
50. *AZT/MCT underscores women's health,* Green, C.W., 6 April 1998, SEA-AIDS e-mail list

Participants in the ACG discussion

- Kees Boer, Academic Medical Centre, Amsterdam
- Maria de Bruyn, Royal Tropical Institute
- Maarten van Cleeff, Royal Tropical Institute
- Doortje 't Hart, Kinderen in de Knel
- Françoise Jenniskens, Royal Tropical Institute
- Peter Kok, Memisa Medicus Mundi
- Adriaan Korver, Netherlands Red Cross Society
- Frans Mom, Hivos
- Mirjam Schieveld, Anthropological-Sociological Centre, University of Amsterdam
- Frits van der Hoeven, Medical Coordination Secretariat
- Jan Vorisek, Memisa Medicus Mundi
- Marianne Wijermars, AIDS Coordination Bureau

4

MATERIAL ON HIV/AIDS

SENT BY

MEDICAL MISSION INSTITUTE

UNIT FOR HEALTH SERVICES AND HIV/AIDS

SALVATORSTR. 22

D-97074 WÜRZBURG

GERMANY

MISSIONSÄRZTLICHES INSTITUT WÜRZBURG

Arbeitsgruppe AIDS und Internationale Gesundheit
Département du SIDA et de la Santé Internationale
AIDS and International Health Department
Departamento de SIDA y de Salud Internacional

Salvatorstr. 22
D-97074 Würzburg, GERMANY
Telefon: +49-931-80485-0
Telefax: +49-931-80485-25
E-Mail: miss041@rzhub.uni-wuerzburg.de
December 1997

Recommendations on:

Care at home for patients with AIDS in resource poor countries

This paper is meant for the use by NGOs which wish to embark on a HBC programme as well as for donor organisations which receive applications for financial assistance for such programmes.

1. Definitions:

According to the WHO AIDS Home Care Handbook of 1993 **home care** is described as "any form of care given to sick people in their homes. It can mean things people might do to take care of themselves or the care given to them by the family or health care workers. Care includes physical, psychological and spiritual activities. The term family is used to refer to the person(s) who carry(ies) the main responsibility of caring for a person with AIDS in the home."

A **Home Based Care Programme** (HBCP) is a planned und organised effort with the overall goal to strengthen and support the existing capacity of the family and the community to care for their sick members, in particular in regard to those suffering from HIV/AIDS.

2. Rationale for HBC programmes:

- Existing health services in resource poor countries are not able to provide in-patient services for more than a few days for the continuously increasing number of seriously ill and dying HIV-infected persons as a result of the actual logistic and financial constraints of hospitals.
- The traditionally provided care for sick persons at home is threatened - in respect of persons with AIDS (PLWAs) - for a number of reasons:
  - the socio-economic conditions of poverty and the lack of a functioning public social network make appropriate care at home appear unrealistic;
  - the predominantly heterosexual transmission often leads simultaneously to illness of husband and wife; the latter who is the traditional care provider, is frequently sick herself;
  - the usual support from the extended family may not be forthcoming due to fear and rejection and/or as a result of the AIDS related decrease in the number of young and middle-aged adults in a family, or, because there is no extended family available as a result of urbanization and migration.
- Home care for AIDS patients in resource poor countries is therefore an acceptable option only if support from a HBC programme is available.

- HBC is also needed by other chronically or terminally ill patients. Their inclusion in a HBCP has the additional outcome of decreasing the stigma and promoting the prevention of HIV infection..

3. Needs of the affected which determine the content of a HBCP:

- There are common needs experienced by PLWAs:
  - acceptance by family, friends and community and help in the struggle with fear and anger, feelings of guilt, low self-esteem, despair and loneliness;
  - knowledge how to avoid infecting others on the one hand, maintenance of confidentiality on the other;
  - relief in respect of the many symptoms like pain, diarrhoea, nausea, skin conditions etc. and access to medical care for specific problems, i.e. the treatment of opportunistic infections, in particular TB. (It is understood that virostatic drugs are not available for 90% of the HIV infected in the world);
  - basic everyday requirements like food, water, shelter which are frequently lacking due to poverty;
  - adequate plans to provide for the future of the family, in particular the children left behind;
  - an environment appropriate for a death in dignity and in peace with all those dear to the patient.
- Family and community members need
  - to have adequate knowledge about the disease and its mode of transmission;
  - to be enabled to give primary care and to know where to look for help in emergencies;
  - to be assisted in their struggle to survive and helped to deal with bereavement and an uncertain future.

The needs of PLWAs, their families and communities show variations in different continents, countries and regions. It is therefore necessary to assess the specific situation in an area when planning a HBC programme and to do this in a participatory manner.

4. Different types of HBCPs:

There are two main concepts of HBC programmes in resource poor countries and a whole range of variations in between:

4.1. **Hospital initiated HBCPs** were introduced by mission hospitals in East and Southern Africa. They are characterised by the following: A professional team from the hospital, preferably a multi-disciplinary one, visits PLWAs who were diagnosed and/or discharged from the hospital in their homes, according to a regular schedule. The emphasis is on the professional input, provision of medicines, pastoral counselling, training and supervision of the family regarding the nursing care given. The main characteristic is: the health care system assists the family/community to deliver home care.

4.2. **Community initiated HBCPs** have been started at a later stage by communities (community based organisations) themselves who realised that the traditional coping mechanisms of caring for the terminally ill and for those left behind after the death of breadwinners were no longer capable to deal with the overwhelming needs. The emphasis lies on care by volunteers on a very basic level, i.e. help with household chores, simple relief from suffering and hardship and spiritual accompaniment. The community becomes active to assist the health services.

4.3. Nowadays a wide **range of variations of the above two types** exist and hardly one programme ressembles another one in all details. Hospital- or health system initiated HBCPs depend increasingly on the help rendered by volunteers from the communities. Community initiation of a HBCP i

possible if there is enough awareness of HIV/AIDS, if the affected are accepted and the magnitude of the problems are actually felt by enough members of the community to exert pressure for action. Frequently Community based HBCPs have been initiated by a Health- or Church Organisation with the active participation of the communities who are then more and more taking over the organisation and control of the programme.

5. Essential elements of a HBCP:

5.1. The range of care/support services:

A HBCP should be as comprehensive as possible, i.e. it should

- guarantee basic nursing care (by family members or volunteers);
- provide simple counselling and psychological support for the sick person and his/her family during the illness and after bereavement (this may include legal assistance regarding the formulation of a will and its implementation);
- offer spiritual accompaniment;
- meet emergency social needs of the patient and his/her family/orphans during the illness and after the death of the head and breadwinner of the family;
- contribute to the prevention of further spread of HIV (through informaton, education and communication (IEC) aiming at persons in the environment of the patient, the community generally and specific groups);
- promote self help and a spirit of good neighbourliness.

5.2. The persons cared for are:

- terminally ill AIDS patients, but preferably also patients suffering from other terminal or chronic diseases, as this helps to decrease stigmatisation;
- HIV infected persons who need support or advice;
- family members of the above, in particular orphans, widows and guardians of orphans (here too no difference should be made between 'AIDS orphans' and ophans generally);
- community members (through IEC work).

5.3. The care providers and their tasks:

5.3.1. The HBC volunteers:

Any HBCP depends on a large number of well trained, sufficiently supervised and committed volunteers, female and male ones, who come from the environment of the persons to be cared for. They visit their patients/clients at regular intervals in order to render the services described under 5.1. above in co-opration with the employed staff. They are not supposed to get any remuneration; however, it is very important that they receive some incentive or encouragement through public recognition in the community and/or identifying insignia awarded to them and/or occasional small gifts like, for instance, a simple meal together.

5.3.2. The staff:

A HBCP needs also a small, but adequate number of properly employed persons with relevant 'professional' background (which does not mean that they must be highly qualified professionals), adequate experience and leadership qualities who receive appropriate training for their task. They should have the necessary physical and psychological capacity, a strong commitment to serve under often difficult circumstances and be prepared to work for a modest remuneration. Their main tasks are of an organisational and controlling nature, i.e. basic and ongoing training of the volunteers, their ongoing supervision and support and the monitoring of the programme. They participate

also in the actual care for the patients/families and undertake here mainly duties like assessment of patients, trying to meet their medical needs, assisting communities in the establishment and running of income generating activities (IGAs) and engage in IEC activities for community groups, schools etc. In order to be able to perform their duties properly they must be provided with some means of transport.

Perhaps the most fundamental qualities of those employed as well as the voluntary co-workers of the programme are empathy and solidarity with the affected persons. Not to be overlooked is the fact that they need recognition and ongoing support from those in charge in order to be able to carry the emotional burden which is an inevitable part of the continuous caring for seriously ill and dying patients of whom the great majority are young adults.

5.4. Financial and material resources:

A HBCP is not a cheap venture inspite of the fact that the majority of services are rendered by volunteers. HBC is less costly than care at the hospital although a direct comparison is not possible as each service covers a different spectrum of care. Expenses arise for employed personnel and for the material resources needed.

5.4.1. Personnel costs:

Their magnitude depends obviously on the number and type of persons employed and differs much between programmes and countries. The employment of a greater number of persons with qualifications in the nursing field may improve some of the care aspects of the programme but is likely to raise costs substantially. Lack of sufficiently experienced personnel for supervision may threaten the proper performance of the volunteers and endanger the whole programme.
In addition to salaries and possible payment for accomodation and/or a pension or sick funds, costs accrue for training not only of the employed personnel but particularly also of the volunteers. A small amount should be set aside for other expenses for volunteers as described under para 5.3.

5.4.2. Material resources:

a) For effective work, some form of *adequate transport* must be provided for each staff member with a supervisory function to enable them to move about in their area of responsibility. The type of transport will depend on the size of this area, the type of terrain and the existing infrastructure; accordingly a bicycle may suffice in one case whilst a motorbike or a vehicle may be called for in another. The least costly (purchase price, petrol and maintenance costs) but at the same time sufficiently effective means of transport must be chosen. - In densely populated areas of cities use of public transport may be a possible solution.
b) Provision must be made for the emergency relief of the material needs of the affected. (It is frequently reported that the main complaint of PLWAs refers to their and their families material needs and that care providers perceive their inability to meet these needs as jeopardizing their efforts.) This necessitates the earmarking of some funds for the purchase of basic items like food, clothing, soap, blankets, the payment of school fees and the provision of seed money for IGAs.
To the 'material' needs belong also medicines for symptom relief, for dressings and other items and for gloves for the protection of the care givers.

It is self-explanatory that, in a resource poor country, a HBCP cannot function without financial support from a donor organisation. However, efforts must be made over time towards the sustainability of the programme through its integration into existing community structures/committees who must assume increasing responsibility also regarding the mobilisation of local material and financial resouces.

5.5. The organisational structure:

A HBCP needs an organisational structure for proper planning, organisation of training, supervision and monitoring of services, for budgeting and financial control. Details of the structure will depend a.o. on the size of the programme. There should be a board who has the overall control and carries responsibility towards funding agencies. The membership of the board must be as representative as possible of the communities, their leaders and the official authorities. Local community committees can be very helpful in observing as well as supporting the carers in their areas of activitiy.

Day-to-day organisation and control will have to be dealt with by the employed personnel who must be also equipped with some basic management expertise. It is important that staff meet at regular intervals amongst themselves as well as with the volunteers under their supervision. Monitoring procedures must be designed in such a way that they provide necessary information without taking too much of the carer's time.

5.6. Other important aspects of a HBCP:

- Community acceptance and involvement are important prerequisites for the functioning of any HBCP; they should preferably come from within the community. In particular, the sustainability of any HBCP depends fully on its integration into existing community structures and the support by community members and -leaders.
- Similarly the acceptance and support of a HBCP by church authorities help sustain the commitment of the care givers. Active participation in the care activities by members of the clergy and/or religious sisters boost the service.
- The HBCP should not contravene Governmental policy.
- Networking with other relevant organisations is necessary for cooperation, mutual assistance and to avoid that services overlap.
- Participation of HIV infected persons in the HBCP as carers and educators is a boost for the programme.
- A HBCP should not stand in isolation but be part of a 'continuum of care'. A close link with the health system is necessary for any HBCP which is not structurally part of a health service. It will enable the hospital/health service staff to refer PLWAs on discharge to the HBC service and for the HBC personnel to refer patients who need medical care for opportunistic infections to the hospital/health service.
- Confidentiality must be maintained in as far as this is possible within the special circumstances of a HBCP.

6. Constraints affecting HBCPs:

- An unfavourable spatial distribution of the people, i.e. great distances between homesteads, a mountaineous terrain and bad roads hamper frequent contact between the patients and the care givers. Lack of suitable transport make such a situation worse.
- The allocation of more than a few families to a volunteer or a very large area to one supervisor weakens the efficiency of their service and causes frustration, burn-out and drop-out.
- The inability to provide medicine for the relief of suffering, urgently needed help for material needs, the difficulties involved in starting and maintaining income generating activities as a result of inadequate financial resources and/or for other reasons, lead to dissatisfaction of the target group and to frustration of the carers.
- Inadequate basic and particularly ongoing training and updating, lack of opportunities for the sharing of experience and inadequate supervision and support of the care givers are likely to discredit the programme.

- The constant contact with seriously ill and dying patients, with the material hardships and the mental suffering of the affected families on the one hand as well as all above listed constraints lead to burn-out of volunteers and employed personnel and a high drop out rate.

7. Outcomes which must be avoided:

- that an intolerable burden is placed on already overburdened families, in particular on women;
- that seriously ill patients are discharged into grossly inadequate home conditions when families live through severe economic hardships ("home-neglect" isntead of home-care)
- that proper management of treatable conditions like tuberculosis is delayed as a result of long intervals between follow-up visits;
- that professional staff cannot function properly as a result of lack of medications
- that chronically ill people in need are excluded because they are not affected by HIV
- that HIV tests are required to get access to the programme.

8. Criteria regarding the promotability of a HBCP by an overseas donor organisation:

There is not one model type for an effective HBCP. Each one has to be tailored individually according to the specific needs, local circumstances and available resources.
A programme should:

- have a holistic approach, i.e. include care for the physical, psychological, spiritual and social needs of the PLWA and his/her family; the care for the family should extend beyond the death;
- include aspects of prevention of further spread of HIV;
- not discriminate on grounds of ethnicity, religion or others regarding those cared for as well as the carers;
- include patients other than PLWAs as this helps decrease stigmatisation, particularly in the initial stages;
- contain the essential elements outlined in § 5 above;
- deal constructively with the constraints outlined in § 6 above;
- generally keep a healthy balance between the desirable and the feasible in regard to the services offered;
- include indicators for evaluation in the initial plan.;
- have the strongest possible backing and involvement of the community.

The paper is based on the study of many relevant publications which cannot all be listed and on the personal experience gained during visits to HBCPs in different countries and their evaluation.

5

MATERIAL ON HIV/AIDS

SENT BY

MEDICAL MISSION INSTITUTE

UNIT FOR HEALTH SERVICES AND HIV/AIDS

SALVATORSTR. 22

D-97074 WÜRZBURG

GERMANY

Migration and HIV

Josef Decosas* and Alix Adrien*†

AIDS 1997, 11 (suppl A):S77–S84

Keywords: AIDS, HIV, migrants, emigration, immigration

Introduction

There is sufficient evidence of an association between human mobility and the distribution of the HIV pandemic. This association is more likely to be related to the conditions and structure of the migration process than to the actual dissemination of the virus along corridors of migration. However, the hypothesis of the latter dominates public policy and occupies much of the public discourse on HIV and migration. A public health response to the issue of HIV in the context of human migration should be based on an analysis of how mobility increases the vulnerability to HIV infection rather than on an investigation of the index case. Successful interventions to address behavioral aspects of migrants' vulnerability to HIV infection must take into account the competing needs of these groups due to the disrupted social norms, the isolation, and the lack of economic, social and family support. Effective programs closely involve the migrant communities in the design and implementation of the interventions, thereby avoiding stigmatization and increasing cultural acceptability of the program.

HIV and human mobility

Epidemics of HIV spread along the corridors of human migration. How could it be otherwise? The virus can only propel itself from one place to another inside the body of an infected person if we discount the international trade in blood products as an insignificant contribution to the pandemic spread. Human mobility is therefore at the center of the strategies to control the spread of HIV. Did 'sex tourists' introduce HIV into Thailand and Haiti [1,2]? Do long distance truck drivers spread AIDS throughout Africa and India [3,4]? Will migrant workers returning from the Gulf States ignite an HIV epidemic in Bangladesh [5]? Is AIDS in Turkey primarily a problem of foreigners [6]? Are migrating prostitutes and seasonal farm laborers the main reason for the spread of HIV from Côte d'Ivoire into the neighboring countries [7]?

The answer to all these questions is probably a qualified 'yes', but public opinion and public policy have little use for qualification. Public reaction to a threat, especially such a menacing threat as an epidemic of AIDS, is to focus on the visible. What can be seen and understood are people moving across borders, especially if these people look different. Mandatory testing of international migrants, immigration restrictions, and deportation of HIV-infected persons are common practice [8]. Xenophobia charges the attempts to stop AIDS at the national borders with passion. Well-established tools of infectious disease control through contact tracing and quarantine provide the rationale. The argument that HIV infection resembles a chronic condition with a dynamic that renders these types of public health measures near useless meets with cognitive dissonance. If we are told that we have to adopt barriers and limits to our personal behavior to protect ourselves from infection, it is difficult to understand why we cannot erect barriers in society to protect ourselves from an epidemic. We are only changing the scale, not the logic.

HIV infection is well established everywhere in the world, and the attempts to halt its spread by controlling the movement of infected or potentially infected persons have proven futile and expensive besides causing considerable personal hardship. The virus may have entered the country in the body of a migrant or traveler. It has, after all, the characteristics which allow it to slip through even the tightest *cordon sanitaire*. But once in a country, the epidemic curve follows its own dynamic, which is soon independent of any fuel from abroad. Importation of HIV remains visible because infected foreigners capture public attention, but it is only significant in epidemiological terms at the very beginning of the epidemic and has little influence on its course. We do not know all the reasons why adult HIV prevalence reaches 30% in some

From *ProAction: Partners for Community Health and †Regional Public Health Department, Montreal, Quebec, Canada.
Requests for reprints to: Dr Josef Decosas, ProAction: Partners for Community Health, C.P.428, Succursale H, Montréal, Québec, Canada H3G 2L1.

© Rapid Science Publishers ISBN 1-85650016-0 ISSN 1350-2840

locations and only 0.1% in others, but we know that it is not related to the rate of importation of HIV.

The problem of the epidemiological link between migration and HIV

Human mobility is associated with the risk of HIV infection. Mobile populations have higher infection rates than those who do not move independent of the HIV prevalence at the site of departure or the site of destination. The epidemiological relationship between migration and HIV status in villages in northern Senegal was described by Kane *et al.* [9]. Their study found that 27% of the men who had previously traveled in other African countries and 11.3% of spouses of expatriates were infected with HIV. From the 414 subjects living in neighboring villages and selected as the control group because they and their spouses had not traveled outside Senegal in the last 10 years, only two (one man and one woman) were infected with HIV. A more recent study in Uganda reported that age- and sex-standardized HIV prevalence rates in a rural area ranged from 5.5% among people who never moved to 12.4% among those who moved to a different village in the same area, to 16.3% among those who joined the cohort from another area during the study period [10]. High HIV prevalence rates in areas of high out-migration in Mexico [11], Senegal [12], and in the south-east of Ghana [13] have also been linked to the return of HIV-infected migrants and the subsequent infection of their spouses and newborn children.

On a somewhat larger scale there is an ecological association between the regional distribution of HIV in Africa and the concentration of mobile populations. Côte d'Ivoire and Burkina Faso, the two countries with the most active labor migration flow in West Africa also record the highest adult HIV prevalence rates in the region (the high prevalence reported for Togo of 8.46% is, in our opinion, an error of estimation), and a similar association can be found in the countries of southern Africa supplying the laborers for the South African mines [14].

However, studies of HIV prevalence among mo populations are problematic because they focus atten on migrants rather than on the migration phenome The public policy response to the publication of studies is often the search for the index case an groups who are already stigmatized and living on margins of public acceptance [15]. Ethnic mino groups, such as Haitians in Montreal, have rea strongly against such research and refused to coope with the researchers [16]. From a public health pers tive, however, the key link between human mobility the epidemic profile of HIV is not the origin of migrant, but the conditions of life during the voyage at the site of destination.

An attempt to understand the vulnerability of mo populations to HIV must begin with an understan of human mobility. Human migration, people chan their place of residence permanently or temporarily complex phenomenon with many different faces. attribute of 'being foreign-born' is a convenient ca category to assess the dimension of mobility in any ticular society. However, it excludes internal migr tourists, and commuters, and it includes a large nu of people who, although born in a foreign country essentially sedentary and have few attributes of migr The category can also instantly create large 'mig populations' when national borders shift, as for inst in the break-up of the former Soviet Union.

The scale of human mobility

Based on 1985 census data published by the Un Nations [17], the World Bank inferred that in 19 least 125 million people lived outside their count origin [18]. The fact that the most recent data are 1985 indicates how difficult it is to arrive at such an mate. The reported trend between 1965 and 1985 shows that, while the absolute number of migra increasing, the increase appears to keep pace with o population growth (Table 1).

Table 1. Migrant population by region.

	1965		1985		Percentage change 1965–1985	
	Millions	Proportion of population (%)	Millions	Proportion of population (%)	No. migrants	Proportio migra
Industrialized countries and former Soviet Union	31.00	3.5	47.40	4.5	+52.9	+1.0
South Asia	18.70	2.8	19.20	1.8	+2.7	−1.0
East and Southeast Asia	7.60	1.9	7.50	1.2	−1.3	−0.7
Sub-Saharan Africa	7.10	3.0	11.30	2.7	+59.2	−0.3
North Africa and Gulf States	6.20	4.3	19.20	7.6	+209.7	+3.3
South and Central America	5.90	2.4	6.50	1.5	+10.2	−0.9
World	76.50	2.3	111.10	2.2	+45.2	−0.1

Source: World Bank [18].

There is no universally accepted convention to define and categorize migration and migrants. Migrants may be defined by their legal status [19] or ethnicity [20], or migration can be categorized using parameters of duration, motivation, and distance. If we exclude short-term visitors (tourists, for example), the most important categories are labor migration, refugee migration, resettlement migration, internal migration, and commuting.

Labor migration

Migrant laborers cross borders to find employment, stay for a period of several months to several years at their destination, and return for long periods to their place of origin. Repeated or 'circulatory' migration is the rule. Migration is often sex segregated, in that men follow different routes and have different destinations than women. For instance, the migration of agricultural laborers from the Sahel to the coastal countries of West Africa is dominated by men [21], whereas women predominate in the coastal migration stream between Ghana and Côte d'Ivoire [22].

It is difficult to estimate numbers of labor migrants. Many of them are working illegally and are therefore not counted. The International Organization for Migration estimated that, in 1991, 70 million people were working legally or illegally in another country [23]. The magnitude of labor migration often becomes evident when, for political reasons, mass expulsions are ordered. Thus, in 1969 Ghana ordered 300 000 foreign workers to leave the country [24], and following the 1991 Gulf war approximately 500 000 Jordanian and Palestinian workers in Kuwait were replaced by Asians and Egyptians [18].

Although public policy in labor-importing countries often focuses on controlling the entry of HIV by screening visa applicants, there is evidence that the risk of HIV infection among migrants is more closely related to the conditions of life in the receiving country than to the prevalence of HIV in the sending country [25,26]. The factors that determine the vulnerability of migrant laborers include the long absence from the social control of their home environment, housing in single-sex hostels or colonies, lack of access to medical care for sexually transmitted diseases (STD), substance use related to loneliness and boredom, and a dysfunctional symbiosis between sex work and migrant labor [27–29]. In some countries, labor camps of several hundred men are serviced by a handful of female prostitutes who may each have intercourse with 20–30 workers during a weekend following payday [30]. This highly disassortative mixing pattern of sexual activity in male labor camps increases the probability of HIV infection independent of the number of different sexual partners of each worker [31].

There are, however, no studies of the social impact of massive out-migration. The demographic distortion observed at the sites of destination [32] has its complement at the site of recruitment. We do not know, for instance, what pattern of sexual networking is established in villages where a large proportion of young men are absent for many months.

Refugee migration

Refugee movements are unpredictable and volatile. According to estimates by the US Committee for Refugees, 16 million persons were seeking shelter or asylum in another country in 1991 [33]. By the end of 1992, the United Nations High Commissioner for Refugees reported more than 21 million refugees [34]. Refugees often move in large groups under spectacular and often horrific circumstances. HIV is not foremost on their mind. However, the violence that accompanies or precedes the move, and the unhealthy environment of refugee camps which may become permanent residences constitute a very elevated risk of HIV infection for refugee populations [35]. The cultural and language barriers, which are a factor of vulnerability for those refugees lucky enough to find asylum, may be relatively insignificant compared with the terrible conditions of their voyage. A serological study of Ethiopian immigrants to Israel linked the elevated HIV prevalence in this group directly to their stay in a refugee camp in Addis Ababa [36].

Resettlement migration

International migration for the purpose of resettlement is distinct from circulatory labor migration. The migrants intend to stay at their destination, they often move as families, and they do not routinely or regularly return to their country of departure. Some of them may be refugees, but most of the migrants have been actively selected by the receiving country under a family reunification scheme or to meet the country's own demographic and developmental needs. Australia, Canada, and the United States, the three principal destination countries for resettlement, received about 1.3 million immigrants in 1989 [37]. This figure may well be surpassed by the current waves of resettlement in eastern Europe and the former Soviet Union. A general review of health status of immigrants in industrialized countries revealed that low health indicator scores can persist into the second generation, linked to poor working and living conditions and to reduced access to health care [37]. Vulnerability to HIV is, at least in part, linked to the same conditions which are at the basis of the overall poor health of these populations.

Internal migration

Population movements within countries, especially rural to urban migration in the countries of rapid population growth, dwarf the size of international migration. The volume of rural to urban migration can be estimated by comparing urban population growth rates with total population growth rates in a given region under the conservative assumption that urban and rural populations have similar birth rates. In 1992 for instance, the West African urban population of 72 million experienced an excess of growth of 1.7 million people per year over the number expected by applying regional popula-

tion growth rates. This means that close to 1% of the total population of the region (206 million) moved from rural areas into the cities in 1 year [38,39]. The relationship between internal migration and HIV seroprevalence, and the conditions of life of rural to urban migrants that may explain some of this relationships were presented at a symposium of the First European Conference on Tropical Medicine in 1995 [10,40].

Commuting

Commuting means frequent and regular travel between residence and area of work. It may be domestic or international. When the distance between the two sites becomes large enough, and when the frequency of movement slows to biweekly or monthly home visits, a situation analogous to labor migration arises. Distinct from commuters, but sufficiently similar to be categorized in the same group, are itinerant populations of traders and long distance truck drivers who follow routes for several days or weeks with regular periodicity. Truck drivers have become a major focus of HIV and STD prevention programs aimed at migrant populations. Their movement and their socialization patterns make them an important group in understanding the spread of HIV in many regions of the world [41]. The 'truck town' hypothesis, constructed on the basis of epidemiological data from seven countries served by the port of Mombassa in Kenya, postulates that HIV has spread along the main transport routes carried by truck drivers from the coastal cities to the rural interior [42]. Although the importance of truck drivers in the spread of HIV is evident, it may be overstated relative to other frequent travelers such as traders, salesmen, and railroad workers who have similar movement patterns but are much less visible than the men in the large transport vehicles.

Targeted programs

HIV prevention and support programs for migrant groups face a number of difficult challenges. Programs of health education, condom promotion, or provision of STD services can never address the underlying problem of social disruption caused by war or by a migrant labor system. Reducing the need for migration should be a long-term goal, but it is beyond the remit of these programs [43]. Interventions that successfully overcome language and cultural barriers are often faced with the many competing needs due to poverty, the lack of housing and security, the fear of deportation, isolation, and the lack of social and family support. An intervention may have to widen its scope in order to be accepted by the migrant population. Thus, FAMME (*Forces d'Action pour le Mieux être de Mère et Enfant*), a private voluntary association providing HIV prevention services for destitute female manual workers from rural areas in Lomé, Togo, had to redesign its program to also respond to the urgent health needs of the women's children in order to be acceptable [40]. Similarly, health educators working with As women in San Francisco's massage parlors found t they often had to become engaged in the pressing ne of these women related to their immigration and le status before they could adequately address the issue HIV prevention [44].

Populations in refugee camps may not yet have fu escaped the cycle of violence which drove them fr their home, or they may be controlled by militant grou who brutally enforce a pro-natalist policy for politi reasons [35]. Groups of male migrant workers and co muters, such as long distance truck drivers, may ha developed dysfunctional anti-communities in whi risk-taking confers status and other social rewards. these situations, HIV prevention is of low perceived p ority and the acceptability of prevention messages is lo

Overcoming these barriers through careful targeti requires labeling, and labeling of an already stigmatiz group often reinforces stigmatization. In 1992, followi the national football team's loss against Ghana, mobs Côte d'Ivoire invaded the Ghanaian quarters in ma towns and assaulted female sex workers blamed f 'spreading AIDS'. In 1996, long distance truck drivers Madras picketed the offices of an HIV preventi project which, according to their perception, was attac ing their reputation by focusing on HIV preventi messages (S. Sundaraman, personal communicatio 1996). Ethiopian immigrants in Israel and Haitian imm grants in Montreal have reacted against policies of blo donor selection which have excluded them from don tion.

The evaluation of the effectiveness and impact of ta geted interventions among a stigmatized and often cla destine population is difficult. A valid approach to impa evaluation requires the establishment of cohorts, which often not possible among mobile populations. Most ta geted interventions are quite recent, and are complicat by cultural and linguistic barriers. The most promisi approaches have managed to maintain the appropria level of visibility while developing and maintaining goo working relationships with the organizations of the co cerned communities. PSKP (*Progoti Samaj Kallayan P tisthan*) a non-governmental organization (NGO) pr viding sexual health services to migrant (rural–urba female garment workers in Dhaka, Bangladesh, wor closely with factory owners who provide time and spa for health education and clinical services (J. Hyderi, pe sonal communication, 1995). PPP (*Projet de la Préventi et Prise en charge*), a project of HIV prevention serving largely Ghanaian population of female sex workers Abidjan, Côte d'Ivoire, derived much of its initial succe through the active participation of a retired Ghanai public servant who provided the link to the chiefs of t ethnic associations of Ghanaians in this country [4 Among Haitians in Canada, Ethiopians in Israel, a Africans in the United Kingdom, the lack of tru

towards host national initiatives was overcome by giving migrant organizations and individuals a leading role in the intervention and research [46–48].

In addition to the general principles of avoiding stigmatization, being conscious of cultural and linguistic barriers, taking account of competing needs, and involving the target community in the design of interventions, successful HIV prevention programs for migrants have specific characteristics according to the type of migration.

Labor migrants

Successful programs for migrant workers address their specific emotional, social and sexual needs before departure, during travel, and in the host country. In West Africa, where people have been migrating for nearly a century between rural communities in the Sahel to the southern coast, there is consensus about appropriate programming among migrant workers. The interventions should be regional in nature and include the use of mass media in the regions of high out-migration, interventions along the migrant's route in partnership with transport workers and staff from transport unions, and interventions at the destination site in collaboration with migrant's local organizations for mutual assistance [49,50].

An example of an intervention along the route of labor migration is an HIV education project on the ferries carrying migrant workers between North Africa and France. Trained volunteers board the boats in Tunisia and Morocco and during the sea voyage initiate group discussions among passengers on issues such as risk perception and risk behavior [51]. Results of the evaluation of the project show that the travelers are eager to discuss issues related to AIDS in informal group sessions and face-to-face interviews on board the ferries [52].

Programs for migrant workers in high labor migration areas also have to take the social host environment into consideration. In Zimbabwe and Ghana, the introduction of male migrant labor fostered new patterns of sexual behavior among the women of the rural host population [13,53]. A similar situation was recently reported from Lesotho where the influx of a large male migrant workforce to construct the Lesotho Highland Water Project has resulted in a dramatic increase in HIV transmission [54]. Programs of HIV prevention among large male migrant work forces also have to address the vulnerability of women in the host population through health education and the creation of income opportunities. The creation of employment for women has been suggested as an effective means to decrease the high rate of STD and HIV transmission among women of Haitian origin living in the sugar cane estates of the Dominican Republic [26]. Zanmi Lasante, a community-based organization located in Haiti's lower Central Plateau, a major out-migration area for Haitian workers in the Dominican Republic, has recently introduced literacy and job programs to help poor women survive the oppressive social conditions which put them at increased risk for HIV infection [55].

Refugees

The need for HIV prevention and treatment of STD in refugee camps is great but it has to compete with all the other priority needs of the refugee population in a situation where the capacity of the host country to provide even the most essential services is severely challenged. Nevertheless, the possibility of effective programming in such an environment was demonstrated by successful HIV awareness, condom promotion, and STD care projects in the Rwandan refugee camps in Tanzania where, after 12 months, there was a demonstrated increase in AIDS/STD awareness and condom use, and clinic attendance of patients reporting symptoms of STD rose from 20 to 250 per week [35,56]. AIDS prevention education among Sudanese refugee children in camps in northern Uganda showed that delivering messages through trained primary school teachers is a feasible way to reach pre-adolescent and adolescent refugees at high risk of contracting HIV and other STD. Of the teachers who answered an evaluation questionnaire, 88 (63%) reported that they talked to their pupils about AIDS, and 29 said they also talked to their friends, relatives, and their church community about the issue [57,58]. AIDS and STD awareness programs by local NGOs among Afghan refugees in northern Pakistan [59] and in the camps of the Bihari (Urdu-speaking) population in Bangladesh [60] have not yet been formally evaluated.

Immigrants

In Europe, an initiative entitled 'AIDS and Mobility' was launched by the Government of The Netherlands in 1990 [61]. A few months earlier, the European Community's project 'Assessing AIDS Prevention' had formed a working group to assess the needs for special programs targeting migrants and to evaluate the experience of such programs [62]. This project has a specific focus on migrant and ethnic minority populations resident or temporarily resident in Europe, while the 'AIDS and Mobility' project addresses wider issues including the issue of HIV prevention among European tourists and expatriates. Both programs have rapidly grown in importance. The 'AIDS and Mobility' project has developed a documentation service, organized a number of conferences and networking meetings, and is exploring the possibilities of launching pilot intervention projects among specific migrant populations. It counted more than 1000 network members by the end of 1994 who were involved in activities such as the establishment and maintenance of telephone counseling services in 'migrant' languages, peer education and volunteer outreach activities in areas frequented by migrant sex workers, group activities such as theater and dance in collaboration with ethnic organizations, and the integration of

the specific concerns of migrants in the design of mass communication messages on issues such as condom use [63].

The evaluation project found that, in general, the northern European countries with well established migrant populations have developed specific programs to address their needs, whereas the relatively new migrant phenomenon in southern Europe has taken the governments by surprise. In the south, the existing projects are usually launched by NGOs or local authorities, are often underfunded, and have difficulty meeting the defined needs. The evaluation concludes that the priority needs of European initiatives for HIV prevention among migrants are the establishment of an adequate financial basis, implementation of strict evaluation, and increased networking among programs to facilitate the exchange of materials and experience [63].

In Canada, the 'Many Voices' project studied the factors related to HIV transmission in selected ethnocultural communities in three major cities, Montreal, Toronto, and Vancouver [64]. The proportion of foreign-born populations in these urban areas varies from 41% in Vancouver to 23% in Montreal. The largest non-European groups are Chinese, South Asians, Caribbeans, and Latin Americans. Using a selection formula based on different ways to estimate HIV vulnerability, six groups were included in a participatory study: the Latin American- and Arabic-speaking community in Montreal, the English-speaking Caribbean community and the community from the Horn of Africa in Toronto, and the Chinese and South Asian communities in Vancouver [65]. The result of the study was a series of specific recommendations for HIV prevention among each one of the groups published in their native language and distributed to their community organizations. There were also a number of general recommendations related to the promotion of condom use as the preferred strategy for protection against HIV infection [66].

Commuters

Truck drivers are the most visible 'commuter' group and there are many projects targeting this population in Africa and Asia. The African Medical and Research Foundation conducted educational seminars and group discussions, and developed education materials which were disseminated widely along the Tunduma Highway which runs from Dar es Salaam through Tanzania to Zambia and Zaïre. The project used the services of truck drivers and hotel workers to promote and distribute condoms. The status acquired by these peer educators through their activities in the project contributed to their remarkable commitment and to the success of the program in increasing condom use in the hotels and rest stops along the highway [67].

Other projects for HIV prevention among truck drivers have worked with trucking supervisors in Uganda [68], provided individual counseling and STD treatment in Indonesia [69], and distributed condoms and offered v untary HIV blood testing and STD treatment in In [70]. In general, these projects have produced encour ing results in terms of HIV awareness and condom u

Conclusion

Mobile populations are highly vulnerable to HIV a other STD because of the circumstances surround human mobility. In this respect, HIV and other ST behave analogous to many other infectious and chro health problems which also are found to be more f quently among migrants. Reaching migrants with p grams to reduce their vulnerability to HIV require comprehensive health promotion and public hea approach which must take into account the social distu bances caused by migration and the competing needs these groups related to issues of safety and survival. E demiological studies of distinct migrant groups are pro lematic because they may lead to stigmatizing pub responses and often increase the distrust of migra populations. Interventions that work closely with t affected communities are showing success, but few them have been formally evaluated. There is still a large unmet need to develop appropriate participatory eval ation studies of such interventions.

References

1. Mulhall BP, Hu M, Thompson M, *et al.*: **Planned sexual behavi of young Australian visitors to Thailand.** *Med J Aust* 19 158:530–535.
2. Johnson WD Jr, Pape JW: **AIDS in Haiti.** *Immunol Ser* 19 44:65–78.
3. Smallman-Raynor MR, Cliff AD: **Civil war and the spread of AI in Central Africa.** *Epidemiol Infect* 1991, 107:69–80.
4. Singh S, Singh N: **Human immunodeficiency virus reaches sm villages in rural India.** *XI International Conference on AIDS.* V couver, July 1996 [abstract MoC454].
5. Majumder MK: **Migrant workers deported for HIV.** *World Al* 1994, 35:8.
6. Aral SO, Fransen L: **STD/HIV Prevention in Turkey: plannin sequence of interventions.** *AIDS Educ Prev* 1995, 7:544–553.
7. Lalou R, Piché V: *Migration et SIDA en Afrique de l'Ouest: Un des Connaissances.* Québec: Centre de Coopération Internati ale en Santé et Développement; 1994.
8. Gruskin S, Hendriks A, Tomasevski K: **Human rights a responses to HIV/AIDS.** In *AIDS in the World II.* Edited by Ma J, Tarantola D. New York: Oxford University Press; 1996:326–3
9. Kane F, Alary M, Ndoye I, *et al.*: **Temporary expatriation is rela to HIV-1 infection in rural Senegal.** *AIDS* 1993, 7:1261–1265
10. Wagner HU, Nunn AJ, Kengya-Kayondo JF, Mulder D **In-country migration and HIV-1 infection in a rural Ugand community.** Presented at the *First European Conference on Tro cal Medicine.* Hamburg, October 1995.
11. Santarriaga M, Magis C, Loo E, Baez-Villasenor J, del Rio **HIV/AIDS in a migrant exporter Mexican state.** *XI Internatio Conference on AIDS.* Vancouver, July 1996 [abstract TuD2906
12. Pison G, Le Guenno B, Lagarde E, Enel C, Seck C: **Seaso migration: a risk factor for HIV infection in rural Senega** *Acquir Immune Defic Syndr* 1993, 6:196–200.
13. Decosas J: **HIV and development.** *AIDS* 1996, 10 (suppl 3):S 574.
14. World Health Organization: **The current global situation of**

6

MATERIAL ON HIV/AIDS

SENT BY

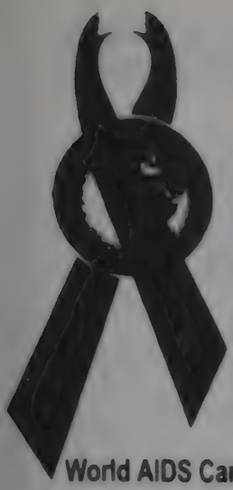
MEDICAL MISSION INSTITUTE

UNIT FOR HEALTH SERVICES AND HIV/AIDS

SALVATORSTR. 22

D-97074 WÜRZBURG

GERMANY



World AIDS Campaign

FORCE FOR CHANGE
World AIDS Campaign with Young People

Under embargo until 9:00 GMT, Wednesday 22 April 1998

Secretariat

UNAIDS

Steering Committee

• UNAIDS
and co-sponsors:

UNICEF

UNDP

UNFPA

UNESCO

WHO

WORLD BANK

• *Others:*

Association François-Xavier Bagnoud

Education International

International Federation of Red Cross and Red Crescent Societies

MTV International

Rotary International

World Assembly of Youth

UNAIDS
20 avenue Appia
CH-1211 Geneva 27
Tel. (+41 22) 791 47 65
Fax (+41 22) 791 48 98
http: www.unaids.org
e-mail: renaudt@unaids.org

Force for Change: World AIDS Campaign with Young People

1998 World AIDS Campaign *Briefing Paper*

UNAIDS is happy to acknowledge the significant contributions to this document made by PANOS.

Pages

Young people in the shadow of AIDS 2
Lack of access to youth-friendly health services 3
Young women's vulnerability 3
Abuse and exploitation 4
Life on the margins 5
Drugs, sex and HIV/AIDS 5
Special needs of young people living with or affected by HIV/AIDS 6

Support from the adult world 7
Adults to trust and talk to 7

Young people: a force for change 9

What young people's participation can achieve 10
The Asian Red Cross and Red Crescent AIDS Task Force (ART) 10
Youth-friendly health services, Lusaka, Zambia 10
Jornal Radical, Brasilia, Brazil 11
Clear Skies Project, Doi Saket, Thailand 11

The Campaign's main objectives 12

Boxes:

Why a campaign with young people? 2
Important human rights in the AIDS era 3
Boys, risk and vulnerability 4
Some help for young drug injectors 5
Sexual health education translates into lower risk 8
Important life-skills in the HIV/AIDS era 10
Young people demand a say 12

Young people in the shadow of AIDS

"We strongly believe that our energy, idealism and commitment can be used to stop the further spread of the AIDS epidemic that is devastating the social and economic fabric of our own countries." – *delegation of young people to the 1993 International Conference on STD/AIDS in Africa, Marrakech*

Of the 30 million people alive today with HIV infection or AIDS, at least a third are young people aged 10-24. Every day, 7000 young people worldwide acquire the virus. This means around 2.6 million new infections a year among young people, including 1.7 million in Africa and 700 000 in Asia and the Pacific. Overall, young people account for at least 50% of all those who become infected after infancy, and in some countries the figure exceeds 60%.

To some extent, these high infection rates reflect the preponderance of young people in the world. The global population is young, and increasingly so. Between 1960 and 1990, when the world population grew by 75%, the proportion of young people increased by 99%. Of the world's young people, 85% live in developing countries, and this is where over nine-tenths of the epidemic is now concentrated.

But population percentages tell only part of the story. There are special reasons why young people are specially exposed to infection with what is above all a sexually transmitted virus. One is that adolescence and youth are times of discovery, emerging feelings and the exploration of new behaviour and relationships. Sexual behaviour, an important part of this, can involve risks; the same is true of experimentation with drugs, legal and illegal. At the same time, young people get mixed messages. They are often faced with double standards calling for virginity in girls but early and active sexual behaviour in boys. They are confronted with media images of sex, smoking and drinking as glamorous and risk-free. They are told to be abstinent, but exposed to a barrage of advertisements using sex to sell goods. Youth-friendly information – information that keeps the realities of young people in mind – is often lacking. Compounding the challenge, in the name of morality, culture or religion young people are often denied their right to education about the health risks of sexual and other risk behaviour, and to important tools and services for protection.

Among the world's young people, some are more exposed to HIV than others. Those living in what UNICEF terms "especially difficult circumstances" include young people who are out of school, who live on the streets, who share needles with other injecting drug users, engage in commercial sex, or are sexually and physically abused. Young

Why a campaign with young people?

UNAIDS and its partners have chosen to carry out its 1998 World AIDS Campaign for and with young people – for three reasons.

One is the special vulnerability of young people to the epidemic. Of all those infected after infancy, at least half are young people under 25.

Another reason is that young people aged 10-24 account for more than 30% of all people in the developing world, where the epidemic is concentrated. If HIV prevention in this huge youthful population fails, developing countries will have to face the staggering human and economic costs of vast numbers of adult AIDS cases.

Most important, working with young people makes sense because they are a force for change. They are still at the stage of experimentation and can learn more easily than adults to make their behaviour safe or to adopt safe practices from the start. But the role of young people does not stop there. They can help take the sting and shame out of AIDS where it is still stigmatized; they can bring kindness and practical help to those already infected with HIV or living in a household touched by AIDS. If they get support from the adults in their lives and from society at large, young people can change the course of the epidemic.

men who have sex with men are disadvantaged by the lack of information and services available to them and directed to their needs.

What most of these situations have in common is lack of respect for young people's basic rights *(see box)*, which leaves them vulnerable to infection with HIV.

The results of this potent mix of risk and vulnerability show up in country statistics. In Zimbabwe, 30% of pregnant 15–19-year-olds attending antenatal clinics were found to be infected with HIV. HIV rates in pregnant women under age 20 in Maharashtra, India, where the epidemic is far more recent, rose from 2.3% to 3.5% between 1994 and 1996.

Worldwide, new infections in young people occur at the rate of five per minute.

Important human rights in the AIDS era

Like adults over 25, young people have a right to information, life-skills (see box on page 10) *and services that enable them to protect themselves against HIV/AIDS. They have a right to freedom from coerced sex, rape and other forms of exploitation. More broadly, young people have a right to develop in a supportive environment, with the solid backing of caring adults in their family, school and community. They have a right to education, skills, employment, health, confidentiality, and protection from discrimination, including discrimination on the grounds of HIV status, sexual practice, sex and age.*

Research shows that these rights help protect health and development. Conversely, when they are not respected and promoted young people become vulnerable – that is, they have little or no control over their HIV/AIDS-related risks. Vulnerability can be created by violations of the rights to education, health care, participation, and safety, among others.

This is why action to prevent HIV infection must extend "beyond AIDS" to the broad social and economic rights that protect young people's health and development. This means grounding policies and programmes in the Universal Declaration of Human Rights, the UN Convention on the Rights of the Child, and the UN Convention on the Elimination of all Forms of Discrimination against Women.

Lack of access to youth-friendly health services

An important indicator of the scale of unprotected sex*, and hence of potential exposure to HIV, is the incidence of other sexually transmitted diseases (STDs) such as gonorrhoea, chancroid and herpes. Around half of the 333 million new STD cases per year are in young people under 25.

Research shows that having an untreated STD greatly increases an individual's risk of getting or passing on HIV to his or her sex partner. Fortunately, most STDs can be cured with antibiotics. But, even where health services are available not too far away, young people have less access to them than adults do. Young people are more reluctant to seek treatment for fear of being found out, or because the services are unwelcoming and unattractive; they are less inclined or able to pay; and they run a greater risk of being treated with disdain or turned away altogether.

More generally, young people find it difficult to reach youth-friendly services where they can discuss questions related to sexual health or sexuality or drug use, or obtain condoms and other protective devices. Counselling is rarely available, and family planning clinics are often restricted to married women and couples. Even when health care providers are willing to receive them, young people are reluctant to talk openly, either out of embarrassment or because they worry that confidentiality will not be respected.

Young women's vulnerability

If HIV infection rates among 13–19-year-old girls are often higher than in teenage boys-the difference in Uganda, for instance, is as big as three-fold, according to estimates by the Medical Research Council Programme on AIDS in Uganda – the reason lies in their greater biological and social vulnerability. Compared with males, the female reproductive tract is more susceptible to

* Unprotected sex means vaginal or anal intercourse without a male or female condom.

infection with HIV and other STDs, a susceptibility that is particularly great in young girls. And girls often run this biological risk very early. In a study conducted for the International Center for Research on Women, a quarter of adolescent girls in Brazil reported having first experienced sex before age 13; in Malawi the mean age was 13.6 years; and in Papua New Guinea first intercourse occurred as early as age 11.

Compounding the biological vulnerability of girls are complex and unhealthy gender expectations which mean that young women have less control over their lives and bodies than their male counterparts, and that boys and young men are tacitly or openly encouraged to adopt aggressive, even predatory sexual behaviour.

The reasons for unwanted sex range from social pressure – girls often have sex because refusing would mean ending a relationship – through coercion by older men in authority (e.g. schoolteachers) to outright violence. Young girls are often targeted because they are believed "safe" and uninfected with HIV. Rape, reported from every continent, has become lethal with the advent of HIV.

Unwanted pregnancies can be seen as an indicator of sex over which women have little control. A study in Jamaica found that 47% of girls under 20 had had a pregnancy, and that over four-fifths of those pregnancies were unwanted. In Tanzania, according to a publication in the *Strategies for Hope* series, 71% of patients admitted to hospital for abortion complications were teenage girls.

> "I have several teenagers I'm counselling. [One HIV-positive 13-year-old] got hounded out of school because she was raped, she was raped by quite a well-known figure where she lives. The kids got to know about it because she ran to the police station – the guy died before he got to court. She ended up Ward 12 suicidal; she said 'I didn't know anything. I didn't know what he was going to do. I didn' t know about sex."
>
> *Woman social worker, southern Africa*

Boys, risk and vulnerability

In the era of HIV/AIDS, boys raised with certain expectations of "masculine behaviour" can contribute to the vulnerability of their female sex partners and put themselves at risk at the same time. To complement the traditional focus on girls, WHO is launching a project aimed at reducing unsafe sex, sexual abuse and violence through work with boys. In the first instance, the project will try to identify successful approaches already being used with male adolescents. In the second phase, strategies will be developed to improve the quality of work with adolescent boys and to expand the scale of successful programmes.

In many cases, a girl's first sexual experience is forced. More than half the young women in a Malawi study reported coercion; over 20% of young women surveyed in Nigeria reported being forced to have sex; in Papua New Guinea over half the young women questioned said they had been coerced, often violently.

Abuse and exploitation

Girls, and boys as well, can be infected through sexual abuse by relatives, family friends, teachers and strangers. Girls and young women in domestic service, often exploited for their labour, are especially vulnerable to sexual abuse by males in the employer's family. Young boys serving as apprentices in the construction trade or helpers on long-haul trucks are sometimes abused by the older men.

Forced prostitution is another form of abuse and exploitation known to fuel the HIV epidemic. Around 30% of 13–19-year-old sex workers (some of whom were forced into prostitution) in Cambodia are infected, and even higher rates have been reported from elsewhere.

Many thousands of girls, but also boys, enter the sex trade every year. In Myanmar, a national HIV survey reported in 1994 found higher HIV prevalence rates in young women than young men and ascribed this to the demand for very young girls in the sex industry, primarily across the border in Thailand. Some farm families take their daughters out of the fields at age 12 or 13 as field work might ruin their main asset for the sex trade – beauty.

While many young people are abducted or sold into the sex industry by parents, relatives or family friends, some are coerced simply by circumstances. Poverty is a key factor, though the commercial sex trade also has links with growing consumerism, violence and crime.

Life on the margins

Children and adolescents who work or live on the streets sometimes engage in an informal trade of sex for money, protection, a meal or a place to sleep. HIV has now been added to the panoply of risks and dangers they face daily, including violence and abuse at the hands of other street kids or adults and authority figures.

Like street children and those in the sex trade, many other young people live on the margins of society in especially difficult circumstances. These include young residents of urban slums or remote rural areas, refugees, and migrants. Reaching these groups with AIDS education is a major challenge. Many are poor, have little access to education and so cannot read and write, may not know the language of the country they are living in, and have little control over the circumstances of their lives.

Another group of young people who tend to be marginalized, and who may be exposed to a high risk of infection because of their sexual practices, are young men who have sex with men. (Young lesbian women are also marginalized but their same-sex practices are thought to expose them to little HIV risk.) Especially in developing countries, these young people are ignored in youth programmes which tend to assume that all sex is heterosexual – despite evidence that same-sex relations occur around the world, even in societies with the strictest taboos against them. Because this kind of sexuality is misunderstood and stigmatized, essential educational messages about AIDS prevention fail to be targeted at this group.

Drugs, sex and HIV/AIDS

Young people who inject drugs are exposed to high HIV risks if they share needles. In a number of Eastern European countries, crumbling health and social service infrastructures combined with high unemployment are contributing to a sense of hopelessness about the future among some young people. Drug injecting with shared needles is reaching explosive levels in cities such as Mykolayev and Odessa. Not surprisingly, HIV rates are skyrocketing as a result. As the world has seen repeatedly in cities from New York to Bangkok, Geneva and Santos (Brazil), once the virus finds its way into a population of drug injectors the spread is explosive. In Manipur, India, the proportion of young drug injectors (median age: 25) infected with HIV zoomed from virtually zero in 1989 to 56% within six months, and to over 67% by 1992.

In the Newly Independent States, as in much of Asia and the Americas, young people engaged in unsafe drug injecting often get little or no counselling, support for stopping substance use, or practical help in switching to less harmful forms of drug use. Discrimination against them magnifies their vulnerability.

Apart from the HIV risk connected with needle-sharing, it is known that alcohol and other drugs can affect sexual behaviour and increase young people's vulnerability to HIV. Excessive drinking, for example, diminishes inhibitions and impairs the ability to use important information that has been learnt about AIDS prevention and to make decisions about protection.

Some help for young drug injectors

As part of the Programme of Youth Development in Odessa, which UNICEF is helping to implement, a project for HIV/AIDS prevention and harm reduction in injecting drug users has reached the pilot stage. Three outreach posts have been set up where former injecting drug users provide current users with medical aid, counselling and new syringes. An estimated 200 drug injectors visit these posts daily. These and other young people in Odessa can also benefit from the Youth-Friendly Clinics project, where they can get confidential, free or inexpensive general medical assistance and counselling as well as consultations with gynaecologists, psychologists and STD specialists.

Special needs of young people living with or affected by HIV/AIDS

Like older HIV-positive adults, young people living with HIV infection require increasing health care as their immune system weakens and their health declines. However, they may face special obstacles in exercising their right to health. Young people may be too poor to buy care, or too afraid of disclosure by health providers who might not respect their confidentiality. The absence of youth-friendly services is an obstacle.

Even before reaching this stage, young people who know they are HIV positive may find it particularly difficult to reconcile themselves to being infected so early in life. It may be harder for them to deal with feelings of anger and confusion about their sex life and the risk of infecting others. Even where HIV/AIDS support groups exist, there may be none specifically geared to the needs of people their own age.

Young people with HIV infection, as well as those whose relatives are living with or have died of AIDS, may be teased, thrown out of school, or deprived of the company of their friends because the parents of the latter forbid all contact.

Whether infected or affected, young people are probably less well equipped than their older counterparts to confront discrimination, including the painful experience of being rejected by their age peers. They may be more ignorant of their specific rights, including the right to non-discrimination in education and employment, and have little access to lawyers or other advocates to fight on their behalf. Overshadowing all are the economic hardships they endure. All too often, initiatives by extended families and communities to ensure that young people are cared for, educated and employed receive inadequate backing from governments.

As these examples show, action in favour of protecting young people from AIDS cannot focus only on individual behaviour. It must also focus on protecting their human rights so that they can ward off HIV and cope with the burden of AIDS. The goal is to transform the setting in which they live into a supportive environment in which they will have more control over their lives, including their HIV/AIDS risks.

> "I go about telling people of my status. Some will actually not believe, but some will just feel pity, or they mock me, or they accuse me of being promiscuous. But this sexual act that left me HIV positive was only my second."
>
> *Young man from Zimbabwe*

Support from the adult world

With the world's power and resources concentrated in adult hands, the onus for AIDS action is on adults — as individuals, groups and governments.

In many industrialized countries and some developing countries, governments and NGOs together have risen to this challenge with considerable success. Through a combination of media campaigns, sexual health education on AIDS for those attending school *(see box on page 8)* and those out of school, the provision of condoms and other prevention services, and the establishment of supportive policies, countries ranging from Australia to Uganda have helped young people adopt safer sexual behaviour, live in more supportive environments, and experience lower HIV infection rates.

In Thailand, sustained prevention efforts were aimed at increasing condom use, boosting respect for women, discouraging men from visiting sex workers, and offering young women better educational and other prospects to discourage their entry or sale into commercial sex. As a result of these measures, carried out by many government departments (including health, education, police and military) in co-ordination with NGOs and the media, HIV prevalence in 21-year-old men in northern Thailand fell from 7.1% in 1992 to 3.5% — less than half — by 1995, and has decreased even further since then.

In Uganda, again thanks to concerted government and NGO action, pregnant young women attending antenatal clinics have considerably lower infection rates than they used to. Most encouragingly, the biggest decrease is in the youngest age group, those aged 15 to 19. In some clinics, rates have plummeted from 38% in 1991 to 7.3% in 1996. While some of this drop can be explained by increased condom use, some is due to the trend among young people to begin their sexual life later.

Another country in which young people are postponing first intercourse is Switzerland. Interestingly, the proportion of 17-year-olds who had begun having intercourse started to fall in 1987. This is the exact same year in which condoms were made widely available to young people and when condom use among 17–20-year-olds who were sexually active started rising from 17%, reaching 69% by 1994.

Adults to trust and talk to

Adult support is not just a question of remote, impersonal action taken by government departments or far-off organizations. One of the biggest needs young people around the world have identified is for understanding on the part of their parents, teachers and community leaders. They need adults they can turn to and trust, adults who will listen as they explain what they are experiencing and coping with.

A major nationwide study in the USA on adolescents has found that the single most important factor in healthy development is a caring adult to whom the young person feels connected — loved by, listened to, cared about. This finding was independent of race, ethnic group and socioeconomic status.

Some of the communication needs to focus on sexuality. According to a report by the International Center for Research on Women, "Despite numerous barriers documented... young women and men want increased communication with adults on sexual matters. For example, nearly 80 percent of female adolescents in the Mexico study said that they would like to talk more about sexuality with their mothers, and 60 percent would like more communication with their fathers. The Khon Khaen, Thailand, school-based study

> "In my country, Botswana, there is a serious problem of communication between parents and their children. This is a cry from our hearts. Parents — talk to us. Without your communication, guidance, dialogue, we are a lost generation. Come to our aid."
>
> *14-year-old girl addressing the International Conference, on STD/AIDS in Africa, Kampala, 1995*

also found that adolescents wanted access to trusted adults."

Research with young people in the Pacific has highlighted the same appeal for communication and connection. As a young Samoan put it, "Parents and kids just don't know each other. They don't know what they're like. They don't know their habits. They don't know when they're hurt".

Young people can communicate with trusted adults through the written word, too. In Uganda, a newspaper called *Straight Talk* with a circulation of around 100 000 a month is targeted at 14–19-year-olds. Breaking new ground, the paper gives ample space to comments and questions from its young readers, and the advice provided by the adult editor is forthright. In reply to one question from a male reader, the paper wrote, "If you are afraid of having sex with your girlfriend, then you are not ready yet. Sexual feeling at your age is normal, but you don't have to have sex. Masturbation could help you relieve these tense feelings." Despite the unusually frank views expressed, the paper is flourishing.

Sexual health education translates into lower risk

Young people have a right to information and education that affects their health. But what impact does sexual health education have? Is it helpful, or can it be harmful?

A WHO review of programmes around the world, recently updated by UNAIDS, found that sex education does not lead to earlier or increased sexual activity, contrary to what many parents feared. The review concluded, instead, that:

- *the life skills needed for responsible and safe behaviour can be learned*
- *good-quality educational programmes help delay first intercourse and protect sexually-active young people from HIV, STDs and pregnancy.*

Anecdotal evidence, too, suggests that sex education encourages safer sexual behaviour. "When I first came to this school in 1994, we had several drop-outs from girls who fell pregnant", says Patience Ruyeko-Miengamero, a teacher at a rural school in Zimbabwe, an hour's drive from the capital Harare. "But last year following sex education programmes in 1995 we never experienced that, and for this year as yet there are no reports of pregnancies."

A separate study of an AIDS prevention programme among high school students in the Philippines found that, though there had been little impact on condom use during sex, the programme had led to a delay in the age of first sex and increased students' understanding of HIV/AIDS. The same trend toward postponement of first sexual intercourse is now being observed in Uganda and the USA.

The UNAIDS review found that effective programmes share certain features:

- *they have as specific aims both delayed first intercourse and protected intercourse*
- *they encourage the learning of life skills (the same skills that also help build self-confidence and avoid unwanted pregnancy, sexual abuse and substance use)*
- *they discuss clearly the result of unprotected sex and the ways to avoid it*
- *they help young people "personalize" the risk through role-playing*
- *they reinforce group values against unsafe behaviour, both at school and in the community.*

UNESCO, UNFPA, WHO and the World Bank, alongside UNAIDS, are all engaged in helping countries translate these findings into action. A few examples illustrate the breadth of this work. With UNESCO's help, decision-makers in West Africa and elsewhere are working together to develop effective educational programmes based on the WHO/UNESCO publication School health education to prevent AIDS and STD: a resource package for curriculum planners. *This publication and the two companion volumes intended for teachers and for students were translated into French by UNESCO. UNFPA, which collaborates with countries on school population programmes, has already introduced the subject of AIDS into these in more than 100 countries, and the World Bank is also using and promoting the 3-volume WHO/UNESCO school package. WHO is providing technical assistance and training to educational and health authorities in China in order to introduce STD/AIDS education into the school system in two provinces with high HIV prevalence rates.*

Young people: a force for change

> "You have to start from the ground [children and youth] with education, so the youth will grow fruitfully and be protected from AIDS. If not, the tree will die."
>
> *Youth delegate to the 4th International Congress on AIDS in Asia and the Pacific, Manila, October 1997*

This call for adult action does not imply that young people should become passive recipients. On the contrary. Young people can spur action and move it in the right direction. They are a powerful force for change in their own households, in the lives of their peers, and in the wider community too.

Worldwide, there are important examples of young people taking an active and even leading part in society, especially where their leadership is encouraged by adults who recognize the tremendous resource they offer. In many countries, young people are encouraged to take on roles as educators and mobilizers in local community groups, religious organizations and the like, including those in the AIDS field. Resilient in the face of profound emotional, economic and physical hardship, some young people are able to survive, thrive, and even take care of others, such as AIDS orphans in Africa who take over responsibility for the care of their many siblings.

There are special reasons why young people's involvement is essential for action on HIV/AIDS. Young people's understanding of life, though often influenced by their parents and other adults, is also developed both with and among their peers. It is groups of close friends that shape young people's understanding of social relationships, teach them about give and take, and enable them to develop a sense of personal competence and responsibility. This kind of peer support is invaluable for AIDS action. With encouragement, it can channel correct information about HIV prevention. It can draw young people into productive activities, such as giving emotional support and bringing practical help and care to those affected by the epidemic.

Peer support, youth to youth, can be aided and encouraged. In an innovative programme of exchange tours, UNDP is bringing young people from Ukraine to Sweden where they visit Youth Clubs that are active in HIV prevention.

Giving young people the space to define what they see as important also brings useful insight and guidance to adults, such as those who are attempting to draw up curricula for AIDS education or to develop policies on human rights protection. When young people explore sex and sexuality, or experiment with drugs, they have their own interpretation of what they are doing. Behaviour that adults may label "risky, to be avoided" may be engaged in by young people not only for entertainment but to show solidarity, to express and receive love, or for comfort and security. When there is mutual respect, rather than attempts solely to influence young people from above, adults can learn to understand these perceptions and, in partnership with young people, develop far more creative and relevant policies and programmes. Partnerships can also draw on young people's immense reservoir of energy.

Young people are a force for change because they are young. They are resilient, open to change, creative and often idealistic — many of them have not yet encountered failures and the disappointments of time. Capitalizing on this force for change calls for young people to work in partnership with adults who encourage their participation and are receptive to their ideas.

What young people's participation can achieve

Whatever the adult world does for the health and development of young people, experience shows that it is best done not by manipulating the young or using them as tokens, but with their genuine participation. This means listening to young people, understanding how they think and act, offering assistance and support without dictating the outcome, and engaging them as active participants in activities and decision-making.

The following highly effective HIV/AIDS-related programmes are examples of approaches that value and fully integrate young people as participants.

The Asian Red Cross and Red Crescent AIDS Task Force (ART)

The Asian Red Cross and Red Crescent AIDS Task Force (ART) was established in 1994 by professionals and young volunteers from 10 national Red Cross and Red Crescent Societies in Asia to promote HIV/AIDS activities at grass-roots level.

In its first two years, ART trained 1000 young people as peer educators using a life-skills approach (*see box*). Teams of Red Cross/Red Crescent staff worked with young people in each country to develop culturally sensitive training manuals on sexual and reproductive health and HIV/AIDS. The manuals were pre-tested with groups of young people in each of the ten countries.

Following this, Red Cross/Red Crescent staff met with young people from national Societies to discuss cultural differences reflected in each manual, to finalize the texts, and to develop principles for conducting sexual and reproductive health training to help young people protect themselves and their peers.

Youth-friendly health services, Lusaka, Zambia

In 1994 a group of NGOs in Lusaka, Zambia, realized that existing primary health clinics were not meeting the health needs of young people. The NGOs joined with the Ministry of Health and the district council in organizing an informal working group to identify these needs and develop a strategic plan. The working group meetings were attended by young people, health staff and NGO representatives.

One of the priorities identified was the need to increase the direct involvement of young people in the provision of services. Consequently, 52 young people were trained over a period of two weeks to provide counselling on pregnancy, sexually transmitted diseases, substance use, financial matters, and communication with partners. Once trained, these peer counsellors provided counselling and condoms to young people who came to the clinic for them. If a young person required medical care, the peer counsellor also served as a link between the young person and the medical staff.

Involving young people as peer counsellors had the double effect of (*a*) increasing attendance at the clinic because services were more suited to the needs of young people, and (*b*) creating strong links between the adults and young people in the community.

Important life-skills in the HIV/AIDS era

How to make sound decisions about relationships and sexual intercourse, and stand up for those decisions.

How to deal with pressures for unwanted sex or drugs.

How to recognize a situation that might turn risky or violent.

How and where to ask for help and support.

When ready for sexual relationships, how to negotiate protected sex or other forms of safer sex.

How to show compassion and solidarity towards people with HIV/AIDS.

How to care for people with AIDS in the family and the community.

COMMUNITY HEALTH LIBRARY AND INFORMATION

Young people felt more comfortable talking first with their peers and then, if necessary, with an adult health care provider.

Jornal Radical, Brasilia, Brazil

Jornal Radical is a monthly magazine for young people developed and published by the Athos Bulcão Foundation in Brasilia, Brazil. The magazine attracts young people's attention by using bright colours, photographs and modern layout, and by discussing issues that interest them. The magazine, written in easy-to-understand language, covers cultural issues such as literature and music, social concerns such as human rights and politics, and personal matters such as sex and relationships.

The magazine has an interactive approach, whereby young people are asked to contribute articles, poems and drawings. *Jornal Radical* also interviews young people about their beliefs and aspirations. One of the magazine's more radical innovations is to arrange for young people to interview government ministers, teachers, artists and musicians.

Jornal Radical has been distributed to over 1.1 million young people in schools over the past year and is immensely popular. *Radical* serves as an informal educational tool to raise young people's social and cultural consciousness as well as to raise adults' awareness of young people's concerns. One young woman wrote in to say, "*Radical* offers us the opportunity to express what we desire and feel, and motivates us to read because the materials are super-interesting."

Clear Skies Project, Doi Saket, Thailand

The Clear Skies Project was created in a rural district outside Chiang Mai, Thailand, to provide emotional and practical support for people with HIV infection or AIDS. The project is entirely run by people who are themselves living with HIV/AIDS, many of them under the age of 25. The project arranges weekly meetings where HIV-positive people come together to discuss common concerns such as health problems and community discrimination. They discuss possible solutions and work in partnership with various institutions, government offices, and health care centres. The project has also worked with other groups to draw up a document outlining the rights of people living with HIV/AIDS.

One of the project's main activities is to provide home care for people with AIDS who are too ill to leave their homes. Volunteers train families to look after sick family members. The project also conducts workshops on meditation and yoga, maintains a herbal medicine garden, and facilitates access to health clinics and hospitals. The project works closely with health care providers to increase their sensitivity to the need of people living with HIV/AIDS for caring, sensitive, and confidential care.

Many of the newest staff members at Clear Skies Project are young men and women. They are vocal advocates of prevention efforts, speaking out at conferences and in schools on the realities, risks and pains of HIV infection. They have been particularly effective in raising school youth's awareness of the difficulties faced by people living with HIV/AIDS. In classrooms where they have spoken, they have often changed young people's attitudes from discrimination and fear to feelings of compassion and solidarity.

The Campaign's main objectives

Force for Change, the 1998 World AIDS Campaign with young people, provides an opportunity for the social and private sectors to mobilize along with young people to promote their highest state of well-being. When young people can work with each other and with the support and strong commitment of the adults in their lives (such as parents, teachers, religious leaders, health care providers and politicians) there is an opportunity to create a social environment that protects young people's rights and enables them to develop to their full potential.

Young people demand a say

At the 1995 International Conference on STD/AIDS in Kampala, a "delegation" of young Africans from 11 countries, ranging in age from 14 to 24, issued a declaration of their needs and priorities. The declaration put forward a series of principles that UNAIDS endorses as essential for effective AIDS action:

- **Youth participation:** involve us in programme planning, implementation and evaluation and policy development in community decision-making processes.
- **Youth-friendly services:** support the provision of services, including centres where we can access information, support and referral.
- **Parental involvement:** strengthen the capacity of parents and other signficant persons in our lives to better communicate with us and provide guidance and support to us, our brothers and sisters.
- **Education about HIV/AIDS and sexuality:** promote skills-based education on physical development, reproductive health and sexuality for both in and out of school youth.
- **Protection of girls and young women:** prevent the sexual abuse and exploitation of girls in vulnerable situations; emphasise the sensitization of boys, young men and elder men.
- **Partnership with people with HIV and AIDS:** build networks between young people with HIV/AIDS and other youth to promote prevention of HIV/AIDS, protection of human rights and acceptance of people with HIV/AIDS in society.
- **Young people's commitments:** commit ourselves to responsible decision-making about our own sexual behaviour and positively influence our peers.

Along the same lines, the Commonwealth Youth Forum held in Edinburgh, in October 1997 put forward a statement of sexual and reproductive rights. The young people recognized "the responsibilities that these rights entail both to individuals and to states" and urged Commonwealth governments to protect those rights pursuant to the Programme of Action they had endorsed in Cairo at the International Conference on Population and Development in 1994. The Youth Forum's declaration states:

All young people of the world regardless of sex, religion, colour, sexual orientation, or mental and physical ability have the following rights as sexual beings:

1. The right to be yourself – free to make your decisions, to express yourself, to enjoy sex, to be safe, to choose to marry (or not to marry) and plan a family.
2. The right to know – about sex, contraceptives, STDs/HIV and about your rights.
3. The right to protect yourself and be protected – from unplanned pregnancies, STDs/HIV and sexual abuse.
4. The right to have health care – which is confidential, affordable, of good quality, accessible to all, and given with due respect.
5. The right to be responsible for one's own actions and those that affect others.
6. The right to be involved – in planning programmes with and for youth, attending meetings/seminars etc. at all levels, and trying to influence governments through appropriate means.

The campaign has five objectives, all of which aim to reduce the spread of HIV, and to strengthen support for young people infected and affected by HIV/AIDS. The objectives are:

1. **To promote young people's genuine participation.**
2. **To promote policies and action for young people's health and development using a human rights framework.**
3. **To increase awareness of the impact of HIV/AIDS on young people and young people's impact on the course of the epidemic.**
4. **To mobilize social and private sectors to work in partnership on young people's health and development.**
5. **To monitor the campaign.**

***

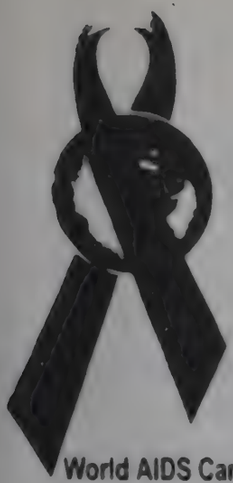
Young people deserve priority attention in the ever-growing HIV/AIDS epidemic. The numbers and the characteristics of the epidemic among young people differ by region: Africa and Asia show more transmission through heterosexual sex, Latin America through homosexual sex, and Eastern Europe and the Newly Independent States through drug injection. But unless all regions develop effective means of reducing young people's vulnerability to HIV and their risk for infection, entire populations of young people will be lost, the epidemic will keep gaining momentum, and the human and economic costs will become intolerable.

In creating culturally sensitive policies and action, it is important to look "beyond AIDS" to the larger picture of young people's health and development. If we do not remedy the underlying causes – including human rights violations – that make young people vulnerable and put them at risk of HIV infection, there is little hope of reversing infection trends durably. There are no shortcuts.

At the same time, policies and initiatives must move beyond viewing young people simply as a "target group" whose problems must be addressed and fixed. It is critical to recognize the tremendous resource which young people represent. Initiatives that combine the strengths of both young people and adults, from the planning stage all the way to implementation and evaluation, will be the ones that will make a difference. The creativity, energy and charisma of young people have brought insight and inspiration to programmes that listen to what young people have to say.

Young people and adults working together can create the FORCE FOR CHANGE in the 1998 World AIDS Campaign with Young People.

-ooo-



World AIDS Campaign

FORCE FOR CHANGE
World AIDS Campaign with Young People

The Joint United Nations Programme on HIV/AIDS (UNAIDS) and its co-sponsors and partners have chosen to focus the 1998 World AIDS Campaign on young people. The main reasons for this focus are:

- Over 50% of new infections with HIV, the virus that causes AIDS, are now occurring in young people in the 10-24 age group. Young people are particularly vulnerable to HIV infection and are being very seriously affected by the epidemic.

- Young people have the power to change the course of the epidemic. Young people are not only being infected and affected by HIV/AIDS, but they are also a key resource in mobilizing an expanded and effective response.

The campaign will be a chance to sustain the momentum created during last year's campaign on the theme of "Children living in a world with AIDS" and to build on some of the initiatives that were begun over the past months. Similarly, it is hoped that the activities initiated during the course of this year will be carried over beyond the year-end, and that the campaign will be seen as an occasion to develop new approaches and to achieve consensus about what needs to be done in both the immediate future and the longer-term.

The theme that has been selected for the 1998 campaign is **"Force for Change: World AIDS Campaign with Young People"**. This highlights the intention of the Steering Committee that the campaign be used as a real opportunity to set up and strengthen processes for involving young people in reducing the spread of HIV, as well as mobilizing support for young people who are already suffering from the impact of the epidemic on their own lives, their families and their communities. The campaign also provides a platform for emphasizing the links between HIV/AIDS and other factors that are critical to young people's health and development including, in this anniversary year of the Universal Declaration of Human Rights, the promotion and protection of their rights.

In preparing this campaign, UNAIDS has been advised by a Steering Committee composed of its cosponsors (UNICEF, UNDP, UNFPA, UNESCO, WHO, and World Bank) as well as the Association François-Xavier Bagnoud, Education International, the International Federation of Red Cross and Red Crescent Societies, MTV International, Rotary International, and the World Assembly of Youth.

Secretariat

UNAIDS

Steering Committee

• UNAIDS
and co-sponsors:

UNICEF

UNDP

UNFPA

UNESCO

WHO

WORLD BANK

• *Others:*

Association François-Xavier Bagnoud

Education International

International Federation of Red Cross and Red Crescent Societies

MTV International

Rotary International

World Assembly of Youth

UNAIDS
20, avenue Appia
CH-1211 Geneva 27
Tel. (+41 22) 791 47 65
Fax (+41 22) 791 48 98
http://www.unaids.org
e-mail: renaudt@unaids.org

Theme of the Campaign

Force for Change: World AIDS Campaign with Young People

Goal of the Campaign

To mobilize young people to reduce the spread of HIV infection and to strengthen support for young people infected and affected by HIV/AIDS. To promote and protect their human rights.

Objectives, Messages and Outcomes

This framework document outlines the overall goal and objectives of the campaign and serves as a guide for action. The main ideas are supported by messages and outcomes that remain broad and qualitative so that they can be adapted to country-level needs. On a country level this document can be used as a base to develop the most effective course of action: outlining specific activities, determining who the main actors will be, and taking into account the urban-rural and socio-economic and cultural differences within each context. At the end of the year, the outcomes will help to determine the campaign's contribution in promoting young people's health and development.

1. Promote young people's genuine participation

Messages

- Young people care about making the world a better place and can be a force for change in promoting health and human rights when they are supported by adults.
- Young people can be mobilized and trained as health promoters for their peers and friends.
- Through direct participation young people can further develop a genuine sense of their own competence and responsibility.
- Young people can play a valuable and lasting role if their participation is taken seriously by adults and aimed at developing their competencies and strengths.
- Openness on the part of adults, especially parents, to listen to and communicate with their children is a necessary part of young people's healthy development.

Outcomes

1.1 Young people's involvement in taking action to ensure their access to information, education, youth-friendly health services, and supportive environments.

1.2 Adults' increased understanding of the strengths of young people and recognition of their potential to contribute to families and communities.

1.3 Increased opportunities for young people to contribute actively to their families and communities while enhancing their own well-being.

1.4 Recognition and support of effective organizations in which young people actively participate in the development and implementation of policy.

2. Promote policies and action for young people's health and development using a human rights framework

Messages

- The Universal Declaration of Human Rights, the UN Convention on the Rights of the Child, and the UN Convention on the Elimination of all Forms of Discrimination against Women, can serve as powerful instruments for reducing discrimination and vulnerability to HIV/AIDS.
- Meeting and protecting human rights to information, education, recreation, safe spaces, and employment is fundamental to reducing new HIV infections.
- Young people have the right to be protected from discrimination and exploitation irrespective of their sex, sexual practices, and HIV status.
- Young men should not be fooled into believing that being manly means having unprotected sex with many women. Being manly is the ability to stand up to negative pressure from friends.
- Effective youth work recognizes the strengths of young people.
- Information is not enough! Young people have the right to develop skills, access services, and live in supportive environments.
- Good quality sexual and reproductive health programmes can delay first intercourse and protect sexually active young people from unwanted pregnancy and from sexually transmitted diseases, including HIV.
- Prevention works: In Uganda, HIV prevalence among pregnant women aged 15-19 years dropped by over 20% between 1990-93 and 1994-95. In Northern Thailand 21-year-old males have increased their condom use when visiting sex workers from 60% in 1991 to 90 % in 1995.
- Health services must be of good quality, confidential, accessible, affordable, and provided with respect.
- The media can increase societal debate on young people's participation in promoting their health and development.
- Young people who are infected with, and affected by, HIV/AIDS have a right to health care and need support in dealing with loss and grief.

Outcomes

2.1 Programmes and policies developed and implemented for young people are grounded in the principles of the Universal Declaration of Human Rights, the UN Convention on the Rights of the Child, and the UN Convention on the Elimination of all Forms of Discrimination against Women.

2.2 Stated commitment by governments, and the civic and private sectors to promoting young people's fundamental rights to information, education, recreation, safe spaces, and employment.

2.3 Better informed educators, school administrators and parents who can promote skills-based school programmes on sexual and reproductive health, gender equality, as well as skills for coping with and reducing substance use and violence.

2.4 Quality educational and entertainment programmes promoting young people's health and development on national and regional television and radio networks.

2.5 Trained health-care professionals and counsellors who understand and provide youth-friendly and gender-sensitive sexual and reproductive health services for young people. These services should include counselling, testing, treatment of sexually transmitted diseases (STDs), peer support, and access to HIV prevention and contraceptive supplies.

2.6 Support by governments and law enforcement offices for programmes providing youth-friendly counselling and treatment for drug-related problems, clean injection equipment, and information on needle sterilization techniques.

2.7 Developed and expanded community-based support networks for young people affected by and infected with HIV, as well as for AIDS orphans.

2.8 Statements by world leaders and celebrities from each region calling for young people's participation in developing policies and taking action on young people's health and development.

2.9 Activities related to the 1998 World AIDS Campaign are extended beyond the campaign year.

3. Increase awareness of the impact of HIV/AIDS on young people and young people's impact on the course of the epidemic

Messages

- Of the 30 million people living with HIV in the world, 9 out of 10 do not know that they are infected.
- 7,000 young people aged 10-24 are infected with HIV every day. Five young people are infected with HIV every minute.
- 1.7 million young people are infected with HIV every year in Africa. 700,000 young people are infected with HIV every year in Asia and the Pacific.

- By the year 2020 there will be over 40 million orphans under the age of 15 in 23 countries highly affected by HIV/AIDS. Most of these children will have lost their parents to AIDS.
- Young people's energy, idealism, and commitment can be channelled to stop the further spread of the HIV/AIDS epidemic and its social and economic impact.
- Programmes have demonstrated young people can be valuable resources when given concrete opportunities to promote their own health and development. It is critical to involve young people in developing and implementing policies and programming with and for young people.
- Young men and women living with HIV often face severe discrimination within their families, communities, schools, and workplaces.
- Young people infected with HIV have the same rights to education, health care and support as young people who are not infected with HIV.
- Gay and lesbian young people are often the victims of discrimination and violence. Such discrimination reduces their access to relevant HIV prevention programmes, to friendly health care, and to supportive environments.
- Some young people such as sex workers, drug users, street youth, domestic labourers, young men in the military, indigenous young people, and imprisoned youth are especially vulnerable to HIV/AIDS. The social and economic conditions in which they live reduce their ability to protect themselves and others against HIV infection.
- There are 250 million working children under the age of 18. At least one-third are performing dangerous work such as bonded labour, commercial sex, and domestic service which violates their rights to health and development and makes them particularly vulnerable to HIV infection.
- Young people who are commercially sexually exploited have little or no power to negotiate safer sex.
- For many young people, unprotected sex may be a means of securing money, affection, comfort, shelter and protection.
- Young women are biologically and socially more vulnerable to HIV infection than young men. HIV infection among young women aged 13-19 in Uganda is 20 times higher than in young men of the same age.
- Young women's control over safer sex is inadequate. A study in Jamaica found that 47% of girls had been pregnant by age 19, and that over 80% of these pregnancies were unwanted.
- More than half of the 333 million new cases of STDs per year are among young people.
- Young women often face physical and sexual violence from their partners, family members, sex partners, teachers, and employers placing them at high risk for unwanted pregnancies, sexually transmitted diseases and HIV/AIDS.
- Young people often face major barriers in accessing health care. Such barriers include excessive cost and health providers' discrimination against young people. These violations of rights must stop to change the course of the epidemic.

- We need to know at what age young women and young men are being infected with HIV in order to develop effective interventions.

Outcomes

3.1 Statements by community and national leaders promoting young people as a force for change in HIV/AIDS prevention and support.

3.2 Increased media and government attention to young people's vulnerability and risk behaviours for HIV including: young women's vulnerability to HIV; violence in the home, school, workplace, and public space; limited access to voluntary HIV counselling, testing, medical treatment and care; shared drug injection equipment and sexual risk behaviour.

3.3 Data on young people with HIV/AIDS disaggregated by age and sex, collected, analysed and disseminated.

4. Mobilize social and private sectors to work in partnership on young people's health and development

Message

- Partnerships between social and private sectors, which include sharing of resources and joint action for young people, are powerful forces in changing a world with AIDS.

Outcomes

4.1 Partnerships on young people's health and development, bringing together governmental and non-governmental organizations including community, youth, and religious organizations, as well as people living with HIV/AIDS, academic institutions, international agencies, the media, and the private sector.

4.2 Young people, community groups and the private sector collaborate in supporting cultural and recreational activities to promote young people's health and development.

5. Monitor the campaign

Messages

- The 1998 World AIDS Campaign provides a platform to promote policies and action on young people's health and development.
- The 1998 World AIDS Campaign is an opportunity to increase young people's participation in policies and action which promote their own health and development.

Outcomes

5.1 Examples of the campaign's contribution towards promoting young people's participation in ensuring their own health and development.

5.2 Examples of the campaign's contribution towards promoting policies and action on young people's health and development using the human rights framework.

5.3 Examples of the campaign's contribution to increasing awareness of the impact of HIV/AIDS on young people and young people's impact on the course of the epidemic.

5.4 Examples of the campaign's ability to mobilize social and private sector partnerships for young people's health and development.

7

MATERIAL ON HIV/AIDS

SENT BY

MEDICAL MISSION INSTITUTE

UNIT FOR HEALTH SERVICES AND HIV/AIDS

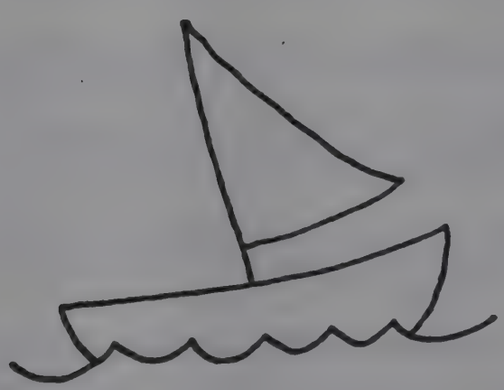
SALVATORSTR. 22

D-97074 WÜRZBURG

GERMANY

The SHIP:

Sexual Health Information Pack



Using participatory learning approaches in sexual health work

Institute of Development Studies

University of Sussex

June 1997

Articles in the SHIP

1 Sue Holden (1997): *Thinking About AIDS as a Development Issue: some ideas to encourage discussion in your organisation.*

2 Alice Welbourn (1993): *PRA, Gender and Conflict Resolution: some problems and possibilities*, Paper for PRA and Gender Workshop, IDS, Sussex.

3 Jerker Edstrom and Sia Nowrojee (1997): *Visit to Sri Lanka: Report on a PRA Workshop for Sexual Health Needs Assessment*, International HIV/AIDS Alliance, London.

4 Alice Welbourn (1996): *Needs Assessment Work Using PRA: some initial notes*

5 Joseph Ssembatya, Anne Coghlan, Rachel Lumala and Deo Kituusibwa (1995): *Using Participatory Rural Appraisal to Assess Community HIV Risk Factors: experiences from rural Uganda*, PLA Notes 3, 62-65.

6 Jaya Shreedhar with Anthony Colaco (1996): *The Mother Saradadevi Social Service Society*, pages 35-41 from *Broadening The Front: NGO Responses to HIV and AIDS in India*, Strategies For Hope, No 11, ActionAid, London.

7 Andrea Cornwall (1992): *Body Mapping in Health RRA/PRA*, RRA Notes 16, 69-76.

8 Gill Gordon (1995): *Participatory Learning for Sexual Health with the Planned Parenthood Association of Ghana*, PLA Notes, 23, 1-5.

9 Francis McConville (1997): *Sexuality Lifelines: - participatory assessment of reproductive health*, PLA Notes, 29, 90-91.

10 Cecilia Simonetti, Vera Simonetti and Silvani Arruda with Debbie Rogow (1996): *Listening to Boys: a talk with ECOS staff*, pages 324-332 in Learning About Sexuality: A Practical Beginning, eds Sondra Zeidenstein and Kirsten Moore, The Population Council, New York.

11 Tilly Sellers and AJ Oloo (1995): *Community Mobilisation Against HIV Infection in Kenya*, PLA Notes 23, 75-81.

12 Tilly Sellers (1994): PRRA Reminders: A Handbook of Participatory Activities for Community Mobilisation Against HIV Infection, CDC/KEMRI, Kenya.

13 Roger Chamberlain, Mindy Chillery, Lenin Ogolla, and Ochieng Wandera (1995): *Participatory Educational Theatre for HIV/AIDS Awareness in Kenya*, PLA Notes, 23, 69-74.

14 Rose Mbowa (1997): *Rehearsing for Reality: Using Role-play to Transform Attitudes and Behaviour in the Fight Against HIV and Sexual Abuse of Young Women*. Based on an interview with Professor Rose Mbowa.

15 Sheelagh Stewart (1996): *Changing Attitudes Toward Violence Against Women: The Musasa Project*, pages 343-362 in Learning About Sexuality: A Practical Beginning, eds Sondra Zeidenstein and Kirsten Moore, The Population Council, New York.

16 Tilly Sellers and Martin Westerby (1996): *Teenage Facilitators: barriers to improving adolescent sexual health*, PLA Notes, 25, 77-80

17 Lucy Antivelink et al (1996): *A Participatory Approach to a Mid-term Review: The AIDS Support Organisation (TASO) Community-based Care Programme, Uganda*

Thinking about AIDS as a Development Issue

some ideas to encourage discussion in your organisation

Sue Holden: June 1997

Introduction

AIDS is now widely recognised as a development issue in two senses:

first, because conditions of poverty and underdevelopment *cause* vulnerability to HIV infection;

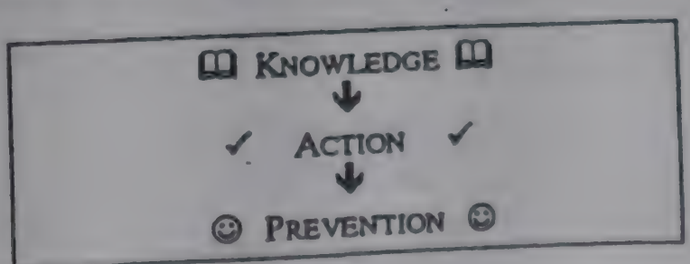
second, because the *consequences* of HIV infection and AIDS undermine development processes and exacerbate the conditions of underdevelopment.

However, getting to grips with a complex view of AIDS, rather than seeing it purely as a health or education issue, is not always easy. We generally prefer to see things in simple terms, and the organisations we work for often assign specific problems (eg AIDS) to specific staff members (eg the AIDS Coordinator) in specific departments (eg Health). This may mean that many of your colleagues do not see AIDS as relevant to their work, and that the organisation does not address AIDS in all aspects of its work, to the disadvantage of its beneficiaries. My experience is that using participatory approaches to explore AIDS as a development issue can help colleagues to come to their own, deeper understanding of AIDS. This is important not only for each of us as development workers, but also with respect to our own lives.

The exercises outlined here should fit into a one-day workshop, but might well need adapting for use in your organisation. Certainly, it would be good to add in some 'ice-breakers' or 'light and lively' games to break up the work. Some organisations have found it worthwhile to use an external facilitator to conduct such a workshop.

Background

In the early days of the AIDS pandemic, there was a widespread assumption that HIV infection was spreading because people did not how to protect themselves. Ignorance was seen to be the problem, so education became the principal strategy for all involved in trying to halt the spread of HIV infection. It was assumed that knowledge gained through education would lead to behaviour change and prevention:



However, our experience raises questions about the validity of this; despite very successful education and awareness raising campaigns, people who *do* know all the facts about HIV transmission and AIDS are still becoming infected. Some like merely to dismiss such

people as being 'irresponsible' or 'irrational', but increasingly we are recognising that things are more complex than was originally assumed. In real life, individuals do not act in isolation of others; a range of factors influence each person's behaviour. So, while *in theory* knowledge leads to behaviour change, *in practice* there may be factors which can block change, and make individuals vulnerable to HIV infection. Some examples of this include:

- People who are powerless, who have little control over their lives, may be fatalistic about the future. Their circumstances may lead to a lack of motivation to take action.

- Some people who want to use condoms, may not be able to afford to buy and use a condom every time they have sex. Lack of money stops them from taking action.

- Some people who use condoms with casual sexual partners won't use them with their regular partners. The block here is to do with social attitudes and judgements about the condom and fidelity.

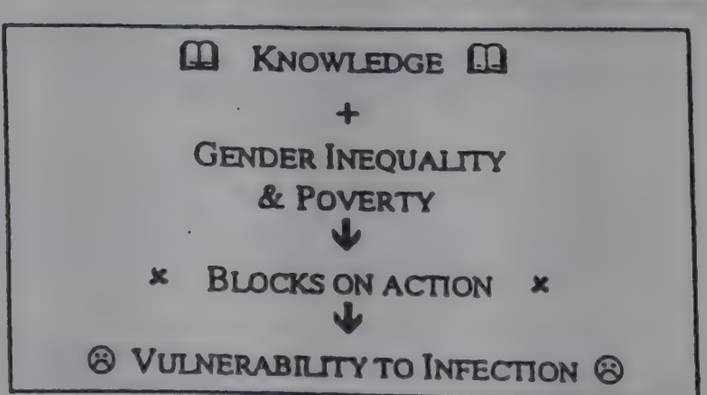
- People who have many urgent, immediate problems - such as needing money to buy food, or sickness in the family - may see AIDS as a distant problem in comparison. People in poverty may not take action because short-term survival is their priority.

- If taking action carries a large risk or cost then people are less likely to act. For example, a woman is unlikely to bring up the subject of condoms if by doing so she risks being abused or thrown out of the home. Here attitudes about the gender roles and proper behaviour of men and women may block action.

- Where there is an unequal power relationship, the less powerful person may not be able to take action to protect themselves. This situation might apply to a woman and man, a pupil and a teacher, or a junior employee and a boss.

- Where women are economically dependent on men, the need for economic support may override the need to act. A woman who wants to leave her husband because she fears being infected by him, may stay because she doesn't have money, land or anywhere else to go.

Of the many different factors which can constrain behaviour change, two key groups concern the central development issues of poverty and gender inequality. Thus:



As the years have gone by, it has also become clear that AIDS is a development issue in terms of its consequences or impact. Experience shows that AIDS is already damaging the quality of life of affected families, and has the potential to slow down the development process at regional and perhaps national levels.

Exercise 1: **AIDS is a _____ issue**

This is a quick warm-up exercise which gets participants thinking about AIDS in a broad way. Simply ask them to brainstorm single words which fit the gap in the phrase "AIDS is a _____ issue".

Exercise 2: **Look a Little Closer**

The aim of this exercise is to allow participants to reflect on the complex reasons for HIV transmission, and to consider some of the impacts of AIDS.

You will need to think of some case studies, each of which tells the story of someone becoming infected with HIV. (If you want some ideas, there are many personal stories in the 'Strategies for Hope' series of booklets - see the Further Reading section of the SHIP). Make sure that the stories are ones which people where you live will relate to, and which cover a variety of circumstances. You may want to include one which will encourage people to look more closely at stereotypes, such as a story which shows how circumstances of poverty and dependency can force women into selling sex. Another story might counter such stereotypes, such as focusing on an educated woman who cannot persuade her partner to use condoms, to show how relatively independent women are also affected by gender inequality. You could also have a story from the perspective of someone such as a child or grandparent who has a relative who is infected, to show how the effects of AIDS are felt within the family.

Tell one of the stories (it is most effective if you speak in the first person, as if you are the character), and ask staff to discuss it in small groups, drawing a chapatti diagram to focus their thinking. Ask them to think about why things happened, and what they foresee as the implications. You may need to encourage them with probing: Why did she do that? What stopped her from acting differently? What might happen next? Each group should come up with a lot of different factors, almost all of which will be relevant to development. After several stories it should be clear that AIDS is not only to do with health and education, nor is it only to do with members of "risk groups".

Exercise 3: **Causes and Consequences**

The wide range of factors that should arise from Exercise 2 are likely to be jumbled up, and may seem rather overwhelming. This exercise should help people to think more clearly, and to explore how AIDS promotes itself by way of a vicious circle.

In this session ask the staff to sort all the factors from Exercise 2 under two headings: causes and consequences. Explain that 'causes' means all the things which make people more vulnerable to HIV infection, while 'consequences' refers to all the things which happen as a result of HIV infection. If the discussion is mainly about what happens at the level of the individual or the family, you might want to introduce the dimension of the region or nation. What should become apparent is that the causes and consequences

reinforce each other in a vicious circle. To take a simple example, a man who cannot afford to buy condoms is vulnerable to HIV infection due to his poverty; if he becomes HIV positive and falls sick, he will become poorer, being unable to work, and having to spend money on medicines. His greater poverty will mean he is even less able to afford to buy condoms, and so his sexual partners are even more vulnerable to HIV infection, and so on. The diagram illustrates the circular connection between causes and consequences.

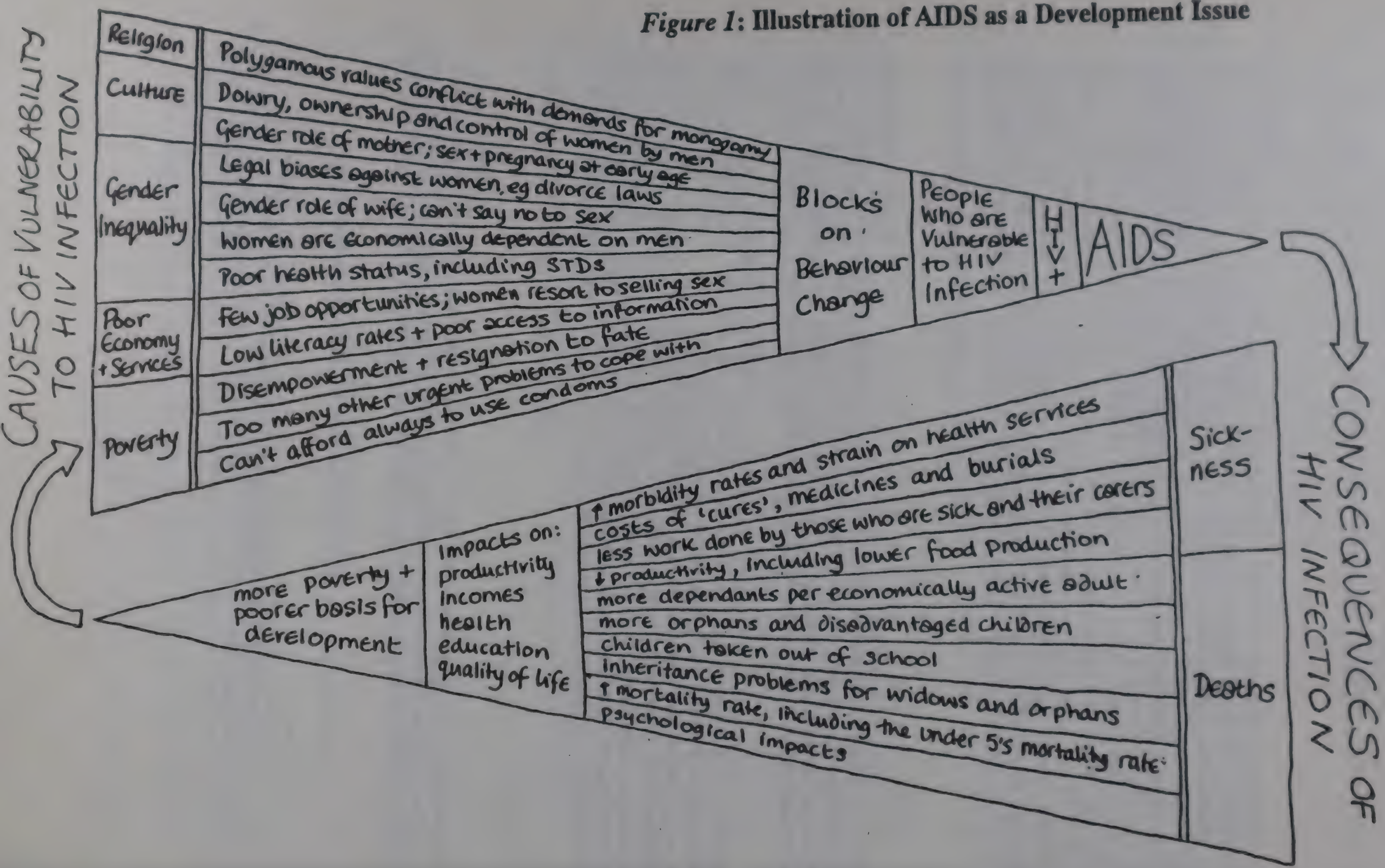
Exercise 4: **Implications for Programmes**

This last exercise aims to encourage staff to think about the implications of seeing AIDS as development issue for the work which they are doing. You will need to think about how best to group people for this exercise, depending on how your organisation is set up.

Ask the groups to review the lists of causes and consequences and to assess which of the factors are currently relevant to the people with whom they work. Are these already being addressed by their work? If not, how could some measures be incorporated? Are there any aspects of their work which might make things worse, for example, where the profits of income generating projects may be spent on alcohol? Some factors may not yet be relevant, but might become so in the future; for example, deaths due to HIV infection might lead to labour shortages. Does such forward thinking have any implications for your current programmes, or your programme planning?

These are very big questions, and you are unlikely to have the time to ask the participants to consider them in detail. The enthusiasm generated by the workshop would hopefully be a starting point, from which a group of people could develop these ideas further. Other themes might include exploring issues concerning HIV and AIDS in your workplace, and encouraging staff to reflect on their own situation. The exercises outlined here should, however, allow participants to get some idea of how AIDS needs to be borne in mind in all aspects of development work, and this, I believe, is the first step towards understanding and addressing AIDS as a development issue.

Figure 1: Illustration of AIDS as a Development Issue


CAUSES OF VULNERABILITY TO HIV INFECTION
Religion
Culture
Gender Inequality
Poor Economy + Services
Poverty
Polygamous values conflict with demands for monogamy
Dowry, ownership and control of women by men
Gender role of mother; sex + pregnancy at early age
Legal biases against women, eg divorce laws
Gender role of wife; can't say no to sex
Women are economically dependent on men
Poor health status, including STDs
Few job opportunities; women resort to selling sex
Low literacy rates + poor access to information
Disempowerment + resignation to fate
Too many other urgent problems to cope with
Can't afford always to use condoms
Blocks on Behaviour Change
People who are Vulnerable to HIV Infection
HIV+
AIDS
CONSEQUENCES OF HIV INFECTION
Sick-ness
↑ morbidity rates and strain on health services
costs of 'cures', medicines and burials
less work done by those who are sick and their carers
Deaths
↓ productivity, including lower food production
more dependants per economically active adult
more orphans and disadvantaged children
children taken out of school
inheritance problems for widows and orphans
↑ mortality rate, including the under 5's mortality rate
psychological impacts
Impacts on: productivity incomes health education quality of life
more poverty + poorer basis for development

12. USING PARTICIPATORY RURAL APPRAISAL TO ASSESS COMMUNITY HIV RISK FACTORS: EXPERIENCES FROM RURAL UGANDA

Joseph Ssembatya, Anne Coghlan, Rachel Lumala and Deo Kituusibwa[1]

The Rakai AIDS Information Network (RAIN) used PRA methods to help community members identify and analyse factors which put them at risk of HIV infection. This article describes the different methods used and what community members and programme staff learned about community HIV risk factors.

HIV Infection in Uganda and Rakai District

Of Uganda's 19 million inhabitants, over 1.5 million are estimated to be infected with the human immunodeficiency virus (HIV). The first known Ugandan cases of AIDS appeared in 1982 in a small fishing village in Rakai District. Rakai is a rural district located in south-west Uganda two hours by road from the national capital, Kampala, and borders on Tanzania and Lake Victoria. HIV prevalence rates in Rakai have now reached epidemic proportions. The overall HIV prevalence rate in the District is 13%, however, rates vary considerably by geographic locale. For example, it is estimated that 39% of all adults in main road trading centres are HIV positive, 25% in rural trading villages on secondary roads, and 9% in rural agricultural villages (Wawer, 1991).

The major modes of HIV transmission in Uganda are through heterosexual contact and from mother to child (vertical transmission). Because of the nature of HIV transmission in Uganda, the devastating impact of the disease on geographic communities and limited government resources, it is essential that communities be involved in promoting sexual behaviour change and sustaining AIDS prevention programmes.

The Rakai AIDS Information Network

The Rakai AIDS Information Network is an Ugandan NGO with the goal of reducing the spread of HIV infection in Rakai District. It is run and managed by health care providers, health educators, counsellors and trainers from Rakai District. The organisation's strategy is to provide integrated AIDS prevention interventions within a community-based health care framework. Its programmes include community-based health care (CBHC) which trains village health committees, community health workers, and traditional birth attendants. The training includes basic community health care but with a special emphasis on HIV prevention. RAIN also conducts a peer education programme for village youths, consisting of a three day training on HIV prevention and condom promotion. Finally, RAIN has an HIV counselling, testing and medical treatment programme which operates through eight decentralised sub-clinics. Both the CBHC and peer education programmes are community-based, with community members selecting amongst themselves the participants to be trained. In addition, community members are responsible for implementing programme activities within their own communities.

---

[1]The authors wish to express RAIN's gratitude to its donors DANIDA, USAID and World Learning, In

In 1993, the Chairman of RAIN attended a Ugandan Community Based Health Care Association/World Neighbours participatory rural appraisal training. The training focused on using PRA for general community health. However, the Chairman thought the methods might be particularly useful in helping community members and programme staff explore factors which put people at risk of HIV infection. Thus, in 1994, RAIN facilitated PRA sessions in two rural high HIV prevalence areas.

Methods Used and Lessons Learned

In order for community members and programme staff to assess community HIV risk factors, we used several different PRA methods. These included mapping, seasonal calendars and men and women's 24-hour activity clocks.

Mapping

Participants organised themselves by village. Each group then drew a map of their village on the ground, using locally available materials such as ash, beans, maize and stones. They first identified the physical features of their communities such as hills, swamps and roads, followed by social features such as homes, churches, schools, and agricultural lands. For each house, participants also identified residents by age and sex and the number of deaths that had occurred in the past 12 months. Participants were also asked to identify which deaths were caused by AIDS. However, because of the stigma still attached to the disease, participants declined to do so.

The village maps were transferred onto paper, and then presented to the group at large. By identifying the number of deaths in the past 12 months, participants realised that there had been at least one death in each home. Although the causes of death were not identified, participants knew that many were in fact caused by AIDS. By seeing the amount of death, participants came to realise the prevalence of AIDS within the community and the implications this has for the community's survival. Next, participants identified specific locations that might put them at greater risk of HIV infection. For example, they identified drinking establishments at which residents often drink alcohol and take outside sexual partners. They also identified isolated areas, such as wells and wooded lots, where women are at risk of being raped.

As solutions to these problems, men proposed that all drinking should be done during the day and that they come home early in the evening. Women suggested that they should go in groups to collect water and firewood, and decided that no water should be collected at night. Some men also offered to accompany their wives and one even said *"I shall do the collecting of water to avoid the risk."*

Seasonal Calendar

A group of about 12 community members also created a seasonal calendar on the ground to identify seasonal health risks. Participants marked the 12 months of the year on the ground and then indicated the amount of rain or sunshine within each month. Under each month, participants then identified the prevalence of both malaria and diarrhoea. When finished, participants transferred the chart to paper (see Table 1).

Table 1. Seasonal Calendar

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Rain or sunshine	##	\	\\\	\\\\	\	#	###	##	\	\\	\\	\
Malaria	mm	o	o	m	o	mm m	mm	o	o	o	o	m
Diarrhoea	d	ddd	d	x	x	d	dd	d	x	x	x	d
HIV	h	h	hh	h	h	hhh	hhhh	hhhh h	h	h	h	hh

Key: #=amount of sunshine
\=amount of rainfall
m=prevalence of malaria
o=absence of malaria
h=prevalence of HIV transmission
d=prevalence of diarrhoea
x=absence of diarrhoea

While analysing the chart with the group, knowledgeable participants related the prevalence of the two diseases to the amount of rain or sunshine. A good portion of the participants were surprised. They had previously thought that malaria and diarrhoea were caused by eating certain foods, such as maize or mangos, which are present at specific times of the year. The facilitator then asked, *"Does HIV transmission have a season?"* He expected participants to say no because transmission occurs throughout the year. However, programme staff and many community members were surprised when a village elder stood and said, *"Yes, in our own community here, we have found that when it is harvesting time and men have money, even a lady ... will accept (to have sex) because she knows he has money."* To investigate this further, the facilitator added a third row to the chart and asked participants to indicate the prevalence of HIV transmission in each month. They said transmission was greatest in June, July and August. The facilitator asked why and participants explained that these are the harvesting times for maize, beans and coffee. Thus, these are the months men have money to spend on alcohol and additional sexual partners. Participants added that transmission is also higher in March and December. This is because men often sell their stored crops to prepare for the Easter and Christmas holidays.

Community members, and particularly housewives, then realised that there are certain times of the year when they are at greater risk of becoming infected. To counteract this risk, members proposed different solutions. As one women said, *"I have learned that ... during harvest season, people need to safeguard one another."* Another women said, *"Men should take precautions, they are the ones going out."* This finding also has important implications tor RAIN's programmes. As said by a staff member at the exercise, *"This is new to me. Now I know we have to intensify educational efforts and distribute more condoms at specific times of the year."*

Twenty-four Hour Activity Clocks

The final exercise was for women and men to create their own 24 hour activity clocks. The purpose was for participants to identify the differences between the amount of work women and men do and to reveal leisure time which might lead to risky behaviours. Men and women formed separate groups of about 15 people each. Each group discussed what they generally did for each hour of the day and an elected person took notes. Members of the two groups then transferred the notes onto paper and presented them to the group at large for analysis and interpretation.

The clocks revealed that in the morning hours women generally wake up, *"play zigido"* (a reggae-type of dance used as a euphemism for sex), clean the house, prepare tea, cultivate, collect firewood and water, and prepare lunch. In the afternoon, they usually eat lunch, make handicrafts or *"play zigido"*, cultivate, collect firewood and water, and prepare dinner. At night, the women continue preparing dinner, feed their children and husbands, eat, sleep and *"play zigido"*. In the morning, men generally wake up, *"play zigido"*, take tea and cultivate, trade, fish or repair bicycles. In the afternoon, they bathe, eat lunch, and rest. Some will then resume work, or *"go boozing"*, play board games or *"go looking for sexual partners"*. At night men listen to the radio eat supper sleep and play zigido.

After each group presented their clocks the general question, *"What have we learned?"* was asked. An elderly man stood and said, *"I have learned that women have more activities than men."* Another said, *"We give them all the work and I only realise that now."* A lively debate then ensued about what constitutes men and women's work. Some men saw the need to better share the work and started to negotiate with the women. One man said, *"If she goes for firewood I will go for water"*. But another man added *"We need to help one another but do not let It lead to conflict. If we get water then don't tell us to also get firewood."* A woman then boldly added, *"Men, we work and work and work and then you ask for sex. We are tired. Men should reduce the time for zigido."* A man then asked, *"Women which should we reduce sex or work?"* Another man said, *"We need to sit together with our wives and decide ... We should schedule the activities including sex."*

By comparing their activity clocks, participants also identified several HIV risk factors. First they saw that men have a lot more leisure time than women some of which is spent drinking alcohol in local bars and having outside sexual partners. The facilitator pointed out that, *"You men leave all the work for the women and then you go out and bring back the virus."* Men also came to realise that because their wives are so tired they sometimes go to other women for sexual satisfaction. As one participant said, *"The women because of all the work get old soon and look not so nice so we go for other women."* However the group realised that by having partners outside of their marriage they put themselves and their wives at greater risk of HIV infection.

The proposed solution was again for husbands and wives to sit together and decide how to better share activities. That way women would be less tired and the men more occupied.

Conclusions

PRA methods were useful in getting community members and programme staff to identify, analyse and address sexual practices which put people at risk of HIV infection. Through mapping, participants were able to identify physical locations where they would be at greater risk. By creating a seasonal calendar participants saw that they might be at greater risk at certain times of year. The 24 hour activity clocks revealed that men have a fair amount of leisure time in which they can and do engage in risky behaviours and that women have an unfair burden of work.

These methods enabled community members to identify problems and find solutions themselves. This in turn may lead to more sustained behaviour change than conventional education information campaigns. Staff also learned more about local sexual practices and were then able to make educational and condom distribution programmes more appropriate. Finally PRA provided the means for men and women to discuss and even negotiate the sensitive issues of work and sex.

Joseph Ssembatya, Anne Coghlan, Rachel Lumala and Deo Kituusibwa: Rakai AIDS Information Network (RAIN). P.O. Box 279. Kalisizo. Uganda

Changing Attitudes toward Violence against Women

The Musasa Project

Sheelagh Stewart

Rape is nothing more or less than a conscious process of intimidation by which all men keep all women in a state of fear.

—Susan Brownmiller[1]

Chibaro *is being forced to do something that you really don't want to do by someone who is stronger than you.*

—Policeman at Zimbabwe Republic police training course, 1989

The Musasa Project is a nongovernmental organization that was established to tackle the problems of rape and domestic violence in Zimbabwe. Its approach has been one of fostering change from within various institutions in Zimbabwean society. In particular, the founders of the Musasa Project worked closely with various branches of the Zimbabwe Republic Police (ZRP) to help institutionalize an effective response to violence against women.

Beginnings

The idea for the Musasa Project began in early 1988 when I and another Zimbabwean woman, Jill Taylor, a psychologist, started to

manifested in Zimbabwean society. Our immediate goal was to work within the legal and law-enforcement systems to alleviate the problem. Our undertaking began in earnest when we received funding in May 1988 to conduct a nine-month pilot project to establish an appropriate model for a follow-up project that would actively attempt to change commonplace attitudes—among Zimbabweans in general and the ZRP in particular—about violence toward women in Zimbabwe.

Initially, Jill Taylor was employed part-time as the coordinator of the Counseling and Research Project on Violence against Women, as Musasa was then called, and I worked as a volunteer. We trained twenty-two women in counseling and training techniques; they became the initial core members of the project. In 1989, we decided to call the project Musasa, meaning "a favorite resting place for tired and weary travellers . . . a temporary shelter put up by a family while they build a permanent home" (MATCH 1993, 2). The Musasa Project has two main activities: (1) public education and outreach, which includes one-on-one talks with women who have been raped, training courses for Musasa counselors, and workshops for the ZRP and representatives of other agencies who deal with rape and violence; and (2) counseling (including legal advice) for survivors of rape, domestic violence, and incest.

As of this writing, the Musasa Project has 600 members, decentralized regional committees all over the country (Musasa 1994), and a full-time paid staff of seven, including a consultant-director, public educator, counselor, legal practitioner, administrator-accountant, and support staff. In 1993 alone, 699 clients were counseled.

The Pilot Project

Musasa's pilot project was an internal process that attempted to establish whether there was a problem with violence against women in Zimbabwe, and if so, how best to approach it. Our approach was to interview more than seventy Zimbabweans who were interested in and concerned about rape and domestic violence and appropriate ways of dealing with these problems. Interviewees included officials of the Ministry of Women's Affairs, doctors, lawyers, government officials, health professionals, academicians, and members of the ZRP.

The pilot project also included training sessions that utilized participatory research in the form of workshops and "training exchanges" for Musasa counselors and future trainers. (A workshop uses participatory training methods—that is, it invites the trainees' active involvement through, for example, role playing—but it involves less individual interchange and has a more clearly defined agenda than a training exchange.)[2] The input from the participants in the training exchanges was crucial in determining the ultimate nature of the project and our subsequent work with the ZRP.[3] All the interviewees were prepared to discuss domestic violence, but no one really wanted to talk about rape. At the end of the nine-month pilot period, we still had not ascertained whether there was a word in Chishona for rape. Then, in the last training discussion group, the word *chibaro* cropped up.

Chibaro, apparently, is the word used for "rape" in Chishona. It is also the word used to describe the labor that the colonialists imposed on the local populace in lieu of a tax, when the populace could not pay in cash. Such a definition presented us with a perfect way to introduce the issues of rape and domestic violence in subsequent training sessions, because of its emphasis on power and the abuse of power. That is, central to any attempt to change ideas and attitudes about rape and violence against women is the understanding that such behavior involves the abuse of power. *Chibaro* also implies a powerful commonality between men and women, providing a bridge to greater understanding and ultimate change: men who rape women are no different from the colonialist government that "raped"—exploited the labor of—black Zimbabweans. Practically everyone with whom we worked was able to relate to such an analogy, and it became the jumping-off point for all the subsequent work we did around the issue of rape.

Rape Culture

In order to tackle the problem of violence against women, the members of the Musasa Project team set out to examine and understand "rape culture" as it exists both universally and in Zimbabwe.

An interesting example of this convergence between universal and local rape culture occurred when I showed *The Accused* (an American movie in which a woman is raped by several men while

other men look on and cheer) at the beginning of a five-day workshop on rape and domestic violence. In Zimbabwe, it is not uncommon to watch movies interactively: everyone participates, shouting warnings and the like during the film. During the gang-rape scene, the audience identified with the rapists by clapping and cheering. This incident seemed to me to illustrate a deep-seated and perhaps even universal identification with ideas about who gets raped and whose fault it is. The end of this story is somewhat more encouraging. By the end of the film, the trainees were deeply embarrassed by their "participation," and the workshop turned into an excellent exchange of views that, in many ways, became the cornerstone of Musasa's future work—creating a space that allows people to speak freely and challenge their own assumptions from within.

At Musasa, we define rape culture as an environment in which traditional assumptions and attitudes about men and women quietly nurture behavior that leads to or supports rape and domestic violence. These assumptions remain unchallenged in a rape culture, and they penetrate into every corner of society, even its medical, judicial, and legal systems. Such attitudes are so deeply ingrained and so insidious that most people are unaware of the ways in which they permit—sometimes even encourage—violence against women to thrive. The result is that women are left feeling vulnerable and frightened of men, but either they don't know why or they are not always aware of those feelings, and they blame themselves when they are abused. Moreover, their attackers as well as those who are supposed to be "protecting" them (that is, the judicial and legal systems) also tend to blame them for their victimization.

Most elements of rape culture throughout the world fall into recognizable patterns—for example, blaming the victim for "bad" behavior, invoking male needs when abuse occurs, or claiming that the victim consented to sexual activity or other abuse. Most legal systems collude with the prevailing rape culture by having in place various impediments to the successful prosecution of rape—for example, the admissibility of the victim's previous sexual history.[4]

Rape Culture in Zimbabwe

these pivots in Zimbabwe is molded by Zimbabwean culture and history. One of the important facets of this particularity is the role played by colonialist authorities in the subjugation of women who were outside the cash economy and were therefore potential revolutionaries. In essence, I would argue that the British South African Police (BSAP) allowed the black male community to "police" black women by imposing on them the fear of rape as a way of controlling their mobility and autonomy. Thus, the attitudes and behavior that were encouraged during colonialist rule helped foster the rape culture that exists in Zimbabwe today.

Blaming the Victim

A common belief is that women get raped because they "ask for it," as evidenced by the following comment:

> *"I can understand that birds who go to nightclubs alone and wearing miniskirts get raped, but I was out with my boyfriend."*
> *—Zimbabwean rape survivor counseled by Musasa*

As evidenced by this statement, it is frightening for a woman to make the link between one mentally deranged man in a dark alley or one "badly behaved" miniskirted woman who "asked for it" and the idea of rape as an institutionalized form of control over women. It is common for rape survivors to look for evidence that they themselves have contributed to the assault—partly because this is such a widespread belief, and partly because the implications of a generalized rape culture are so frightening.

At various workshops that we conducted, the following reasons emerged for why women in Zimbabwe are raped:

- They smoke cigarettes.
- They have "permed" hair.
- They walk alone at night (and this in a country where the transportation infrastructure is poor and it is not culturally acceptable for women to ride bicycles).
- They live alone (a euphemism for being a prostitute).
- They wear miniskirts.

this attitude about women who wear trousers is part of a widespread devaluation of their contribution from that of fighters to that of camp followers and prostitutes.)

Prostitution

A more general reason advanced for raping a woman in Zimbabwe is that she is a "prostitute." In Zimbabwe, as in many other cultures, the use of the word "prostitute" says more about the rapist than it does about the woman he attacks. The types of women who are *not* considered prostitutes are much fewer than those who *are* considered prostitutes. In essence, only women who are unmarried and living with their parents, or women who are married and living with their husbands, are *not* prostitutes—although they, too, may earn this label. It is also generally believed that a woman who wants to have sex is a prostitute, whereas a woman who does not want to have sex is respectable. (See "She Consented," below.)

In Zimbabwean society, to be a "prostitute" is to be utterly marginalized and cut off from all sources of support, both social and material. Thus, regardless of the fact that prostitution should never be a justification for rape, the label is a potent weapon in the armory of rape culture. Social ostracization is particularly crippling in a family-, clan-, and community-oriented culture such as the one in Zimbabwe.[5]

Male Entitlement, Male Need, and the Abuse of Power

In Zimbabwe, as in other parts of the world, rape has a two-part justification, which runs: (1) "She was smoking [wearing a miniskirt, etc.], and I am not responsible for my actions"; (2) "I was overcome and I had to have sex with her."

> *"Men need sex; they get sick if they don't have sex, so if I see a woman, I can't help myself, I have to have sex." —trainee in a ZRP workshop*

In Zimbabwe, there is an additional twist that complicates the story, as suggested earlier: a history of the exploitation of black labor by white colonialists.

> *"He would send my husband away to work. Then he came that night and told me that my night work was with him. He came every day till my husband came back." —Zimbabwean rape survivor and seasonal harvest worker, raped by employer and then fired*

Black women have traditionally been both the most vulnerable and the most threatening in the colonialist scheme of things—most vulnerable because they faced the double oppression of race and sex, but most threatening to the colonialist order because they historically operated outside the cash economy and were therefore beyond direct colonialist control. This situation had two results: the frequent rape of black women by white men, supported by the belief that black women existed to service white male needs; and the refusal by the BSAP to take black women's complaints of rape—whether by black or white men—seriously, and the BSAP's laissez-faire attitude of letting the community manage its own problems.[6]

The Power of Virgins

Myths about the power of virgins appear in numerous cultures.[7] There are two Zimbabwean manifestations of this idea. One is the young virgin as healer of sickness in general and of sexually transmitted diseases in particular. (This myth has had dreadful consequences in light of current HIV infection rates.) In the recent past, men who were ill and visited a *nyanga* (witch doctor) were advised to sleep with a virgin as a cure. Similarly, men who experienced bad rainfall or a bad crop, or—in the urban context—who had bad luck in business were advised to sleep with a virgin to improve their luck.[8]

Second, the Apostolies—a Christian religious sect in Zimbabwe—advise their followers that sleeping with virgins draws them closer to God and that sleeping with their daughters has a biblical precedent.

> *"When he had finished he told me that God only made Adam and Eve and that we had come from Adam sleeping with his daughters and that was why he slept with me." —Zimbabwean incest victim*

She Consented

"Women say 'no' when they mean 'yes.'" This is the father of all old chestnuts. This belief is particularly problematic when the lines between yes and no are blurred—that is, in situations where there *is* consent on the woman's part. In Zimbabwe, this blurring of yes and no is extreme and women sometimes say no when they mean yes, because they are afraid of seeming "loose."[9] The all-encompassing definition of a "prostitute" in Zimbabwe has already been considered, and most—possibly all—Zimbabwean women fear the label. The effect of this fear on women's behavior is that, even in a relationship of mutual respect, when both parties wish to have sex, a woman generally says no several times (in a ritualized fashion) before intercourse takes place. Saying no indicates respectability and is an essential part of the exchange, as is the use of (ritualized) force or at least coercion, which is taken as proof of masculinity.[10]

The Colonialist Legacy: A Dual System of Justice

A further legal-political issue that has contributed to the confusion over "consent" is the legacy of a dual legal system in which the colonialist, white-run jurisdiction dealt with criminal offenses and a traditional jurisdiction, operated by village chiefs, dealt with civil offenses. Criminal offenses, such as theft and murder, are generally more serious than civil offenses, such as defamation of character. Whereas criminal offenses may carry a prison sentence or a fine paid to the state, civil offenses are most often rectified through payment of damages to the individual who has sustained the harm. Sex offenses can be either criminal, as in the case of rape, or civil, as in the case of "seduction" (see Armstrong and Ncube 1987). Seduction, during the time of colonialist rule, involved a situation in which a young man who could not afford to pay the *lobola* (bride wealth) would "seduce" a young woman, often with her consent, pay nominal damages to her father, and then pay the *lobola* over a period of time. Although more expensive in the long run, such an approach to marriage relieved the prospective groom of the need to pay the *rusambo* (down payment) normally required before the

A resulting problem was that many "rapes" (sexual relations without the woman's consent) were called "seductions," for two reasons. First, the people wanted to administer their own legal system as much as possible, as part of a general system of resistance against the colonialist power (with unfortunate results for women).[11] Second, damages were paid to the woman's father in the case of seduction, presenting obvious temptations and also appearing to satisfy the requirements of local justice. Again, the consequences for the woman were severe, in that she could well end up married to a man who had raped her. In cases of rape, which were handled by the colonialist criminal jurisdiction, the perpetrator would go to prison, which was generally perceived as not doing anyone any good.

Although the state now handles all offenses, whether criminal or civil, Zimbabwe's recent history of mislabeling rape as the more innocuous seduction has exacerbated the confusion and helped further blur the distinction between yes and no. Rape is viewed as an act of violence without consent, whereas seduction—which is, in fact, often the same as rape—is considered an offense in which the father's financial interest in his daughter is damaged and to which the woman has given her consent.[12]

Strategizing around Rape in Zimbabwe: Musasa and the Zimbabwe Republic Police

Musasa's initial strategy for breaking down Zimbabwe's rape culture was to attempt to institutionalize an effective response to rape and domestic violence in the police force and various arms of the legal system. The project's early objective in this process was to change the way in which the police behaved in a professional context. Although it was obvious that the police were part of the problem of violence against women, in that they dealt badly with victims of rape and domestic violence, they were also enthusiastic about addressing their problems with and improving their treatment of these cases. During the pilot project, we established an excellent rapport with the ZRP's community relations liaison officers (CRLOs), which we believe made them more responsive to us

Once the Musasa Project itself was under way, the ZRP continued to express an interest in learning how to handle rape and domestic violence cases.

Historical Context for the ZRP Training Sessions

In order to understand Musasa's work with the ZRP, an understanding of the context in which it developed is necessary. Zimbabwe became independent in 1980 and, consequently, the ZRP has been metamorphosing from a much feared and hated state tool under the Smith regime to a force that has sought closer links with the people it serves. The CRLOs were given the specific task of changing this image. In general, then, the Musasa Project was working in an environment where everyone welcomed change away from the previous regime. More specifically, this desire for change meant that the parallel between the Rhodesian regime's oppression and control of men and men's oppression and control of women was easier to invoke, as evidenced by the two meanings of the word *chibaro*. It is probably true to say that an opening existed in Zimbabwe that enabled us to address the basic power issues that underlie acts of rape—an opportunity that might not exist anywhere else.

Our strategy involved a process of analyzing the legal system, choosing levels through which that system could be accessed, and then working from one level within the system to the next. As described above, the first step was a series of workshops, or training sessions, held with the CRLOs of the ZRP. From this group we ascertained that it would be important to train the specific department in the ZRP dealing with criminal offenses. Our strategy was to get the CRLOs to invite officers from the criminal section to the next workshop. It soon became clear, however, that training the ZRP without also focusing on parts of the judicial system was ineffective. The ZRP officers themselves took responsibility for inviting some of the prosecutors from the Harare Magistrates Court to the next training session. A direct spin-off from this was a workshop mainly for senior prosecutors, facilitated by top-ranking members of the ZRP.

The ZRP training sessions always began with a discussion of the problems that the police faced in dealing with rape as an organized institution. These discussions were often accompanied by the use of visual tools of analysis: organizational "maps" were used to initiate discussions about places in the system where the police experienced difficulty when dealing with rape cases. Such discussions almost always indicated common problem areas that became the basis for more in-depth discussion and, ultimately, action.

A training session typically ran for five days and included two days on rape, two days on domestic violence, and one day of liaison with other useful community organizations. Five days is a long time for a workshop, so it was crucial to keep the sessions lively, interactive, and fun for everyone. Controversial comments such as "there is no such thing as rape within marriage" were always opened up for general discussion, and with encouragement and support, other attitudes and alternative opinions emerged. Other controversial topics included the characteristics that do and do not define a "prostitute" and men's responses to women whom they say "lead men on."

Of particular interest in this context was the role played by the female members of the police. During the early training sessions, they seldom expressed opinions and, if they did, they were usually extremely conservative and unsympathetic to the position of other women in Zimbabwe. As the training sessions progressed, this began to change, and two years into the process a gender distinction in opinions began to emerge. On an issue such as "women like to be beaten; otherwise, they feel unloved"—a common topic for debate—all the women and some of the men believed that women did *not* consider beating to be a sign of love. This subject often led to interesting discussions at teatime, with some of those who believed that women enjoy beatings making comments such as, "So you really don't like being beaten?"

Discussions at tea breaks and in small groups often became journeys of self-discovery—a key objective of the Musasa Project, because they represented the potential for changing behavior and attitudes from the inside. They were indicative of an environment in which the trainees felt free to challenge long-held assumptions and traditions associated with rape culture. Because the participants were encouraged to engage in *self*-examination and *self*-criticism, as opposed to enduring criticism from outsiders, they were less likely to become defensive and more open to new ideas—with the result that their behavior and attitudes were more likely to change.

Our Results

Musasa's work with the police began to make a difference in the way the ZRP treated rape victims in the police stations and in the prosecution of rape cases. A typical problem, for example, was that complainants in rape cases often withdrew their charges, which meant that the clear-up rate for rape was low. Consequently, police officers felt that it was easier to ignore the woman when she first came in than to open a docket that was almost definitely going to impose a drag on their clear-up rates. The identification of this problem immediately opened possibilities for discussion about why women withdraw their cases. As a result, almost all rape survivors now give their statements in a separate office, which provides some privacy, and the police treat them with much more sympathy than they did before the project started (Meursing 1993, 30).

Musasa's approach—which fostered a relationship of mutual respect and cooperation with the police force—was also instrumental in speeding up the complaints procedure normally used by the police in cases of rape. When we were helping a rape victim, we would phone the police from Harare and ask that the case be handled quickly. The police response to our requests was excellent.

As the police training sessions progressed, our networking improved, and individual police officers who did not follow the new procedures—that is, attending to rape cases quickly, providing privacy for the complainants, and treating rape victims with greater sensitivity—began to feel the effects of complaints against them. Eventually, this more sensitive procedure for handling rape cases was applied throughout Zimbabwe. At first, the improved response to rape cases helped only those women who were represented by Musasa, but one of the goals of the project has been to broaden this sensitivity to the position of women in general.

There are, of course, more intransigent problems that have proved to be difficult to change, such as the overall legal definition of rape in Zimbabwe (that is, sexual intercourse by a man with a woman without her consent) and the continued existence of the double-jeopardy rule in our law (the rule that permits judges and magistrates to treat with caution the evidence of cer-

Training Sessions

Generally the training sessions were great fun, and everyone thoroughly enjoyed them. The exchange that follows illustrates both the tone and the issues in Musasa's interchanges with the police:

Trainee: Excuse me, but do you know what happens if you have two bulls in one *kraal*? [A *kraal* is an enclosure for cattle made out of thorns, to keep cattle in and intruders (such as lions) out.]

Trainer: No, what?

Trainee: They fight—you can't have two bulls in one *kraal*, so if your wife is trying to be a bull, you must beat her.

Trainer: Do we have two bulls in the Zimbabwean *kraal*?

Trainee: No, only one—the president.

Trainer: And does anyone challenge this bull?

Trainee: No.

Trainer: And does he beat the vice-president?

Trainee: No! [Much hilarity, but an acceptance of the idea that real men with real authority don't need to beat.]

and female complainants in cases of a sexual nature). However, in instances in which the police feel at a loss and in the grip of a system that they cannot change, they have formed working groups with prosecutors to tackle these more intransigent issues. This type of dialogue between law-enforcement officials and lawyers is significant, and it is hoped that legal reform will follow.

One unanticipated effect of this work was that the police themselves began to feel empowered to better deal with cases of rape and domestic violence. Eighteen months into the process, during a discussion of legal issues in one of the training sessions, which was being conducted by a state prosecutor, a number of police officers argued vociferously for a change in the legal defin-

confidence in their position and role seemed to be significant in ensuring better treatment of rape victims. Their new attitude was strengthened with the publication of a manual, distributed by the ZRP, that clearly specified the legal position on rape and the best procedures for handling it.

Musasa's Changing Strategy

As described earlier, we began by trying to change the police officers' professional behavior only. In the early stages of the project, overall behavioral change seemed too daunting an objective to take on. For one thing, it would have meant challenging basic precepts about the position of men and women in Zimbabwean society, and this was perceived as being too risky—perhaps even radical. At that time, issues were cautiously framed and cautiously acted upon, and there was a general reluctance to challenge the patriarchal power structure that underpins violence against women. Recently, however, the Musasa strategy has become far more radical, directly challenging the traditional patriarchal system. The Musasa Project now addresses gender issues directly through a series of gender workshops with health, legal, and education professionals and other interested parties that aims to make all elements of Zimbabwean society aware of "how patriarchy works within all structures of our society" (Musasa 1994, 12).

The project is also taking on broader issues concerning the traditional position of women in society, such as the right to own land and the payment of the bride wealth. Although not, on the face of things, directly related to domestic violence, a woman's right to own land may have an impact on battering, because her dependence on a man increases her vulnerability and makes it difficult or impossible for her to leave him if he is abusing her. Likewise, the practice of paying *lobola*, discussed above, "has become instrumental in controlling and battering women," since women "become devalued when *lobola* is paid for them because they are reduced to the equivalent of a commodity" (Binks 1994, 3). Once a man pays for a woman, he believes that beating her is within his rights, since he "owns" her.

Lessons Learned

The success of the Musasa Project in improving the ZRP's handling of rape cases is a function of the successful institutionalizing of concerns about and problems with rape in the police force and various arms of the legal system. In the final part of this chapter, I examine the strategy employed by Musasa overall, considering which elements have been successful and which have been problematic, and extract general principles that may be of use to other activists.

It is important to begin with a disclaimer. The much-vaunted concept of replicability—the idea that if an approach is sound it will work in other parts of the world—is problematic in the context of rape and domestic violence. Although it is clear that the Musasa approach has made a difference in the way the ZRP deals with rape and violence against women, it is equally clear that the success depended on a specific confluence of values and history, both in the country at large and within institutions, such as the police force, with which we worked. That having been said, some useful principles and ideas have emerged from the work that was done.

1. *It is crucial to know and understand the workings of the system with which one is engaging.* Two examples make this clear. First, our initial sense of success with the CRLOs was misplaced, as they lacked the power to make actual changes in the procedures employed for approaching crime within the ZRP. They did, however, provide the link to the Criminal Branch, which does have the power to make these changes. Second, with a system such as the ZRP, which has a clear division between the upper and lower ranks, it is important to work with all levels—both the top-ranking officers and the police in the stations who actually deal with rape survivors.

2. *It is easier to foster change from within the system than from outside it.* The Musasa Project worked with one part of the system—the ZRP—to get it to acknowledge the need for change, and then to call on other parts of the system (prosecutors within the legal system) to start working on similar changes. This approach leads to wide-ranging change that a small agency such as the Musasa Project could never achieve from outside the system.

3. *The specifics of each approach must be planned carefully.* Training legal professionals is very different from training police officers. Lawyers have a tendency to listen only to other legal professionals, and credibility—in terms of knowledge of the law—has to be established from the outset. Someone with a good working knowledge of the law may be able to suggest innovative legal solutions. In addition, he or she may be able to counter standard legal mythology—for example, the notion that if caution were not exercised in rape cases, thousands of innocent men would now be languishing behind bars, or the belief that women who bring charges of rape are likely to be lying.[14]

4. *There are always gaps in the system, and seeking and plugging such gaps is an important part of any strategy to change the system.* Women in Zimbabwe often fall through vast "cracks" between doctors who do not know the legal definition of rape and lawyers who have to prove in court that a rape took place.

5. *These same gaps can be used to promote improved practice throughout all parts of the system.* Doctors can be invited to workshops by prosecutors, for example. Once a project is "inside" one part of a system, the possibilities are endless.

6. *There are limits to this type of change, and these limits need to be acknowledged.* The sort of progress made by the Musasa Project may depend on a belief among the police and other participants that the project does not pose any threat to the status quo. When the political nature of antirape activism becomes obvious, this type of internal change may become impossible. In addition, there is always the danger of being co-opted into a "cozy" relationship in which superficial changes are made but the fundamental changes required to free women from the threat and fear of rape do not materialize. There are clear differences, for example, between strategies that aim to protect women from the all-pervasive threat of sexual assault and strategies that seek to remove the threat. Strategies falling into the second camp require radical change and are unlikely to succeed within existing systems.

7. *This is hard work.* In 1992, I wrote that this type of work "requires endless patience in dealing with tenaciously held negative attitudes about women and endless repetition of

In conclusion, the Musasa Project strategy has been effective in changing the way the police deal with rape cases and in raising awareness about power issues and their relation to violence against women. However, the extent to which there has been an actual change in the "rape culture" remains to be seen. What continues to be demonstrated by Musasa's experience is that it is possible, under certain circumstances, to work effectively through the existing system to bring about change. One observer familiar with the project summed it up well when she said, "At best, the system will change itself from the inside; at worst, there is a breathing space within which women can be empowered to take the issue further."

Notes

1. Brownmiller's well-known text on rape refers to the generalized existence of what I have called "rape culture." Recent writers in the United States have debated the "*all* men" (emphasis added) component of this definition; nevertheless, there is no doubt that all women fear rape (with reason), and that legal and social changes that would ease these fears have not been implemented to any great degree, let alone to a degree where the fear is unnecessary. I would, therefore, argue for the continuing validity of Brownmiller's statement.
2. The idea of the training exchanges was both to teach the trainees how to better deal with rape and domestic violence and to provide a forum in the classroom where the trainees could contribute their own ideas and knowledge—among themselves and for the benefit of the trainers—about these issues in the Zimbabwean context. In order to allow for the exchange of knowledge and experiences among trainers and trainees, the structure of the training exchanges involves longer tea breaks, more extensive group discussions, and plenty of time for and facilitation of sharing appropriate personal experiences.
3. See Stewart (1992) for an in-depth description of when and how the ZRP became involved with Musasa and the details of Musasa's police training.
4. These impediments vary, from the double-jeopardy rule to the prohibition against charges of rape within marriage, and have been discussed at length elsewhere (see Commonwealth Secretariat 1987).
5. This is such a depressing picture of catch 22–type social control (only prostitutes get raped; therefore, if you were raped, you must be a

this issue in Zimbabwe. In an appeals court case, *The State v Adam Buanasi* (HC-B-48-87), the judge ruled that a woman's presence alone in a bar late at night is no indication that she is a prostitute; that even if she is a prostitute, that fact is irrelevant; and that a "prostitute in circumstances of this nature should be treated like any other complainant."

6. In general, complaints by white women were also not taken particularly seriously unless the accused was a black man. Such a phenomenon is described, albeit in the form of fiction, in Harper Lee's *To Kill a Mockingbird*, in which a married white woman accuses an innocent black man of rape. In fact, it was the accuser who tried unsuccessfully to seduce the black man, and her father beat her for it (see also Vogelman 1990).
7. The Jungian myth of capturing the unicorn relies on both the unicorn as a symbol of purity and virginity and the use of a virgin as the "bait" that attracts the unicorn, who submits and lays his head (and horn) in her lap. This myth is about rites of passage and acquiring strength, and whichever way you turn it, the message is clear: the (young) virgin-woman is the door, the route, and the way. She is nothing in herself except transitorily beautiful, and the rite of passage for the man involves loss for her.
8. The Zimbabwe Traditional Healers Association (ZINATHA) has denied that its members recommend such a practice and claims that unregistered healers are responsible. Whoever is the culprit, the practice persists (Taylor and Stewart 1991; Stewart 1992; Meursing et al. 1993).
9. Although this is something that happens in other parts of the world, campaigns on the issue of "no means no"—although understandable—do not leave room for the complexity of cultural norms that surround sexual exchanges. I am not for a moment suggesting that such complexities or cultural norms excuse rape—rather, that if women working against rape do not open the discussion to consider the complexity of responses to a request (or demand) for sex, particularly culture-specific responses, rape survivors may again be in the position of blaming themselves for not giving clear enough messages.
10. The fear of being perceived as a prostitute is further evidenced by women's use of herbs that dry out the vagina; a wet vagina is indicative of wanting sex and implies prostitution (Runganga 1990; Meursing et al. 1993).
11. Rwezaura (1985) has noted a similar phenomenon in Tanzania and observes: "The development and transformation of customary law during the colonial period was underlined by a process in which custom and tradition became a means by which the local rulers and family heads bargained with the colonial state for retaining a part of their political power in their communities" (4).
12. However, it is important to note in the context of this discussion that the notion of "consent" under African customary law is extremely problematic, because, as noted by Armstrong and Ncube (1987), "customary law marriages are frequently group or family marriages. . . . As such, the notion of free individual consent is often subsumed by the larger interests of the family alliance." That is, the degree of a woman's actual "consent" regarding matters sexual and otherwise is questionable in a society that does not permit women to have the final say over their own destinies.
13. Conversely, the issue of rape within marriage, though taken up by Musasa and hotly debated within the workshops, was never really accepted as a valid issue by the police officers.
14. The response to the latter myth is that false reporting is highest in cases of theft because of the insurance implications, and there is no evidence that false reporting of rape is any higher than in any other class of crime.

References

Armstrong, A., and W. Ncube. 1987. *Women and Law in Southern Africa.* Harare: Zimbabwe Publishing House.

Binks, M. 1994. Violence against women. *Taurai, Speak Out, Khulumani, 3.*

Brownmiller, Susan. 1993. *Against our will: men, women and rape.* New York: Fawcett.

Butegwa, F. 1993. Limitations of the human rights framework. In *Claiming our place: Working the human rights system to women's advantage,* edited by M. Schuler. Washington, D.C.: Institute for Women, Law and Development.

Chirume, L. 1989. A study of the phenomenon of wife beating: Zimbabwe as a case study. Bachelor of laws diss., University of Zimbabwe.

Commonwealth Secretariat. 1987. *Resource manual on violence against women.* London: Commonwealth Secretariat.

Cotton, A. 1993. Proposal for funding the Cambridge Female Education Trust—educating girls to secondary school level in Zimbabwe. Unpublished manuscript.

MATCH International. 1993. *End to violence against women: African women's initiatives.* Harare: Zimbabwe Electricity Supply Authority Training Centre, Musasa Project.

Meursing, C., et al. 1993. *Child sexual abuse in Matabeleland.* Bulawayo, Zimbabwe: Matabeleland AIDS Council.

Musasa. 1994. *The Musasa Project, sixth annual report, 1993–94.* Harare: Musasa Project.

Njovana, E. 1993–94. Gender-based violence and sexual assault. *African Women* 8:17.

Runganga, A. 1990. The use of herbal and non-herbal agents in sexual intercourse by a sample of Zimbabwean women. Ph.D. diss., University of Zimbabwe.

Rwezaura, B. 1985. *Traditional family law and change in Tanzania: A study of the Kuria social system.* Baden-Baden: Nomos Verlagsgesellschaft.

Schuler, M., ed. 1992. *Freedom from violence: Women's strategies from around the world.* New York: UNIFEM.

———. 1993. *Claiming our place: Working the human rights system to women's advantage.* Washington, D.C.: Institute for Women, Law and Development.

Stewart, Sheelagh. 1992. Working the system: Sensitizing the police to the plight of women in Zimbabwe. In *Freedom from violence, women's strategies from around the world.* Edited by M. Schuler. New York: UNIFEM.

Taylor, J., and S. Stewart. 1989. *Musasa: A project for Zimbabwe.* Ottawa: MATCH International.

———. 1991. *Sexual and domestic violence: Help, recovery and action in Zimbabwe.* Harare: A. von Glehn and J. Taylor, in collaboration with Women in Law in Southern Africa.

Vogelman, L. 1990. *The sexual face of violence.* Johannesburg: Raven Press.

PLA Notes 25
February 1996

18

Teenage facilitators: barriers to improving adolescent sexual health

Tilly Sellers and Martin Westerby

● Introduction

Hull, a city in the north-east of England, has a high rate of conception amongst young women aged between 13 and 16 years, relative to the rest of Britain. No-one is quite sure why this is the case, but there are many theories. Some believe that young women deliberately get pregnant to get government housing. Others say that young people lack the skills to access information and contraception, or that services themselves are failing those under 16 years. Another group believe that this is a cultural issue and that young teenage pregnancy is perfectly acceptable in some parts of the city; and so it goes on.

The British government is concerned about the levels of teenage pregnancy in England and has set targets to reduce the rate by at least half. What is not clear, however, is whether young teenage conception is a problem for anyone else. Do teenagers in Hull, their parents, other professionals or people in the wider community see it as a problem? The goal of the Faculty of Public Health Medicine is that *"women should become pregnant by choice"*. Perhaps if there is a problem, it can be seen as not teenage pregnancy in itself, but whether teenagers are becoming pregnant by choice. If they are not becoming pregnant by choice, what then are the barriers to improving adolescent sexual health? What changes would need to be made to increase effective contraceptive use amongst teenagers? What methods do we have for finding this out?

Current research indicates that many factors may contribute to young teenage conception. These include: educational factors, developmental, psycho-social and skills factors, service provision and use and cultural factors (Peach *et al* 1994). It also states that without a multi-agency, 'whole community' approach, these factors cannot be addressed effectively. The idea of a 'whole community' approach is explained by Ashton and Seymour (1988) who say that health education *"is only able to make its full contribution to the reduction of teenage pregnancy and sexually transmitted disease when it is part of an integrated community-based programme and supported by public policies which set out to influence the entire health field in relation to sexual attitudes and the expression of human sexuality"*.

The government Health Authority responsible for the Hull area (East Ridings Health Authority) is interested in finding out two things in relation to young teenage conception:

1. Which of the above factors are operating in those places with the highest young teenage conception rate?
2. How can the idea of a 'whole community approach' best be implemented to address these factors?

One of the Health Authority's main concerns is the effectiveness of services providing information, referral and clinical sexual health services for young teenagers. They are keen to know what changes are needed to make improvements. To try and answer some of these questions, they funded the Young People and Sexual Health project, which is based at the Department of Public Health Medicine in the University of Hull.

● The project

The Young People and Sexual Health project is using a participatory approach to involve young people, parents, workers and the wider community in:

- Identifying factors which influence the way young people make decisions about sexual health.
- Evaluating the provision of information, referral and clinical sexual health services to teenagers, including education, youth and social services, community and voluntary agencies.
- Finding ways to improve teenage sexual health.
- Planning and monitoring the changes suggested.

We discovered that few people knew of, or understood, the concept of PRA. Our first task, therefore, was to introduce the concept of participation to a variety of key people. Most important of these were those who would have to give permission for young people under 16 to be involved, such as teachers, parents and youth workers. We had to make them understand that we would not ask personal questions; that information would belong to the participants; that there would be complete confidentiality for individuals and organisations; and that everyone, regardless of age, literacy level or disability could make a worthwhile contribution. We did this by demonstrating PRA tools wherever possible and by training workers, teenagers and parents in the approach. This has given us the added bonus of creating a pool of local facilitators from different backgrounds who are happy to publicise, support and actually work in the project. The training is in the process of being accredited, which means that participants, if they wish, can gain a national qualification.

● Teenage facilitators

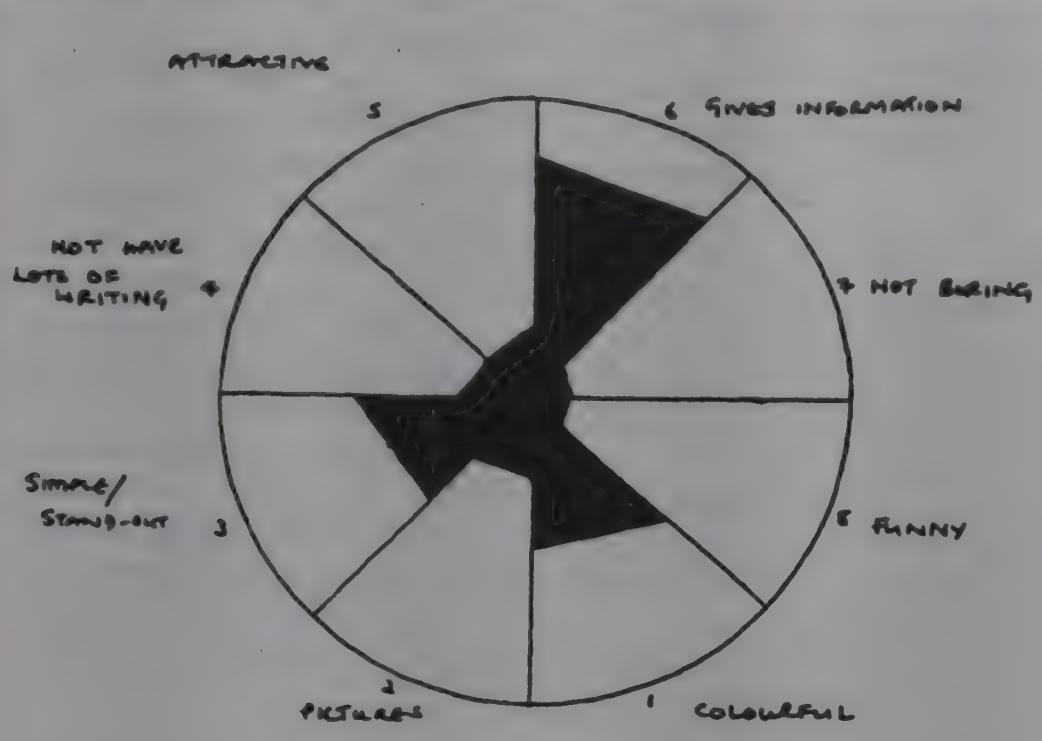
For several months we have been meeting weekly with a group of 15 year-olds (three young women and four young men) for sessions usually lasting two hours. We met this group through local youth workers who described them as 'non attenders', young people who regularly truant from school. After a 'taster' session in which they mapped their local area, the whole group were keen to learn more. During the first weeks they worked on becoming a team and on learning basic PRA tools and techniques. For legal reasons, two youth workers also attended the sessions. The workers were interested in PRA for their own work and it was a challenge to involve them in such a way that they did not dominate the group. Whilst we have not been completely successful in this, they have been encouraged to develop their own skills and a comfortable balance has slowly been achieved. Some of the work done by the young people is described below.

Leaflet evaluation

During a session on evaluation, we looked at ways in which sexual health information leaflets could be evaluated using participants' own criteria (Figure 1). First the whole group discussed what needed to be included for teenagers to read, enjoy and understand sexual health leaflets. These were listed on a large sheet of paper.

The young people then split into pairs, taking one leaflet at random from a pile. Each pair was given a sheet of coloured card with a circle drawn in the middle. Using the 'evaluation wheel' (Pretty *et al*, 1995) they divided the circle into equal parts, each part representing one of the criteria they had listed before. The resulting triangles were then shaded in to show the extent to which the leaflet complied with each criterion. Finally they pasted the leaflet next to its evaluation wheel and presented their work to the rest of the group. Comments included: *"3D effect on writing is attractive; all the leaflets had too much writing and this is not the way young people will take information in; most leaflets are boring; cartoons and 'super stars' would be more eye catching; no leaflet was amusing; some pictures are not relevant to the text; pictures are very clinical, too small and old fashioned; illustrating steps for contraceptive use is good if done clearly."*

Figure 1. Leaflet evaluation using the evaluation wheel



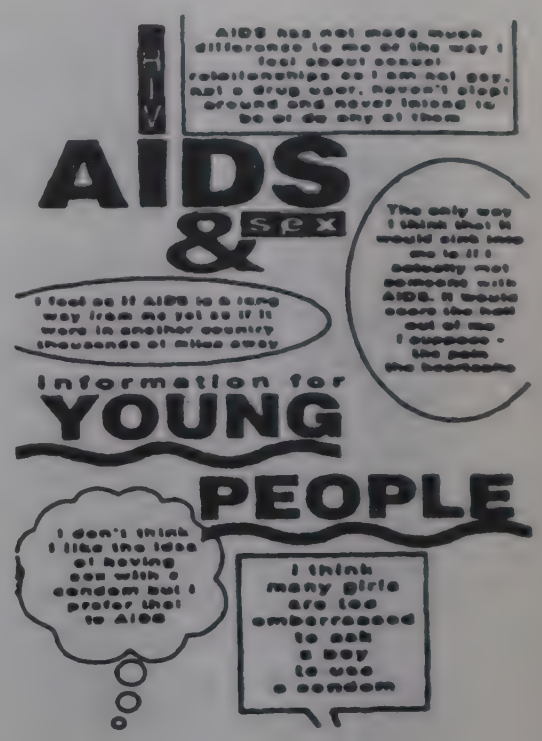
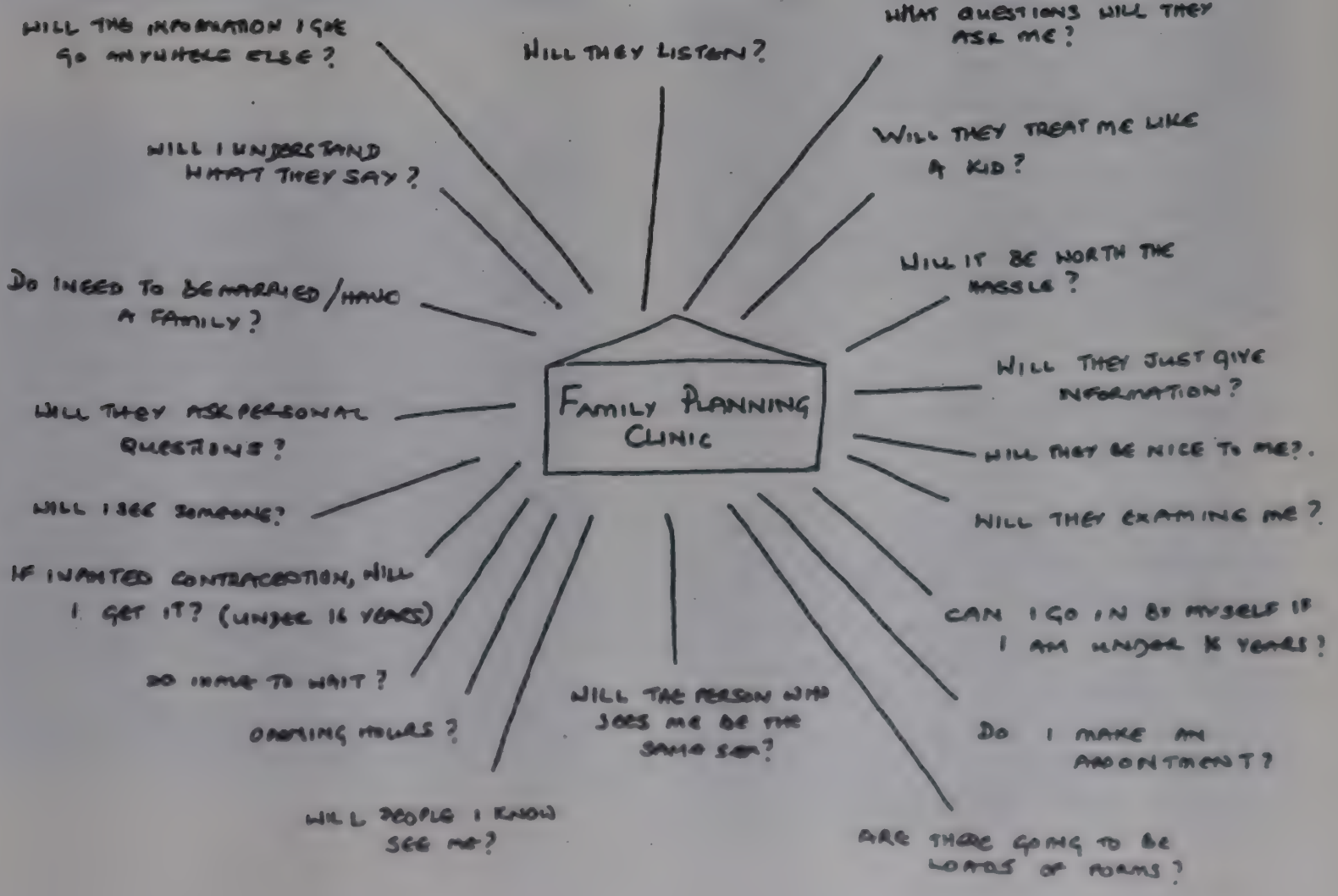

HIV
AIDS
&
sex
AIDS has not made much difference to me or the way I feel about sexual relationships as I am not gay, not a drug user, haven't slept around and never talked to be or do any of them
I feel as if AIDS is a long way from me yet as if it were in another country thousands of miles away
The only way I think that it would affect me is if I actually met someone with AIDS. It would scare the hell out of me I suppose - the pain the heartache
Information for
YOUNG
PEOPLE
I don't think I like the idea of having sex with a condom but I prefer that to AIDS
I think many girls are too embarrassed to ask a boy to use a condom

Figure 2. Young people's concerns when visiting a family planning clinic


WILL THE INFORMATION I GIVE GO ANYWHERE ELSE?
WILL THEY LISTEN?
WHAT QUESTIONS WILL THEY ASK ME?
WILL I UNDERSTAND WHAT THEY SAY?
WILL THEY TREAT ME LIKE A KID?
DO I NEED TO BE MARRIED/HAVE A FAMILY?
WILL IT BE WORTH THE HASSLE?
FAMILY PLANNING CLINIC
WILL THEY JUST GIVE INFORMATION?
WILL THEY ASK PERSONAL QUESTIONS?
WILL THEY BE NICE TO ME?
WILL I SEE SOMEONE?
WILL THEY EXAMINE ME?
IF I WANTED CONTRACEPTION, WILL I GET IT? (UNDER 16 YEARS)
CAN I GO IN BY MYSELF IF I AM UNDER 16 YEARS?
DO I HAVE TO WAIT?
OPENING HOURS?
WILL THE PERSON WHO SEES ME BE THE SAME SEX?
DO I MAKE AN APPOINTMENT?
WILL PEOPLE I KNOW SEE ME?
ARE THERE GOING TO BE LOADS OF FORMS?

Tool development

This group has also been developing their own tools. In their first session they were asked to design tools that would allow other young people to express their concerns about going to a clinic for advice about contraception.

They elected to split into two groups according to gender. Each group decided who would play the roles of facilitator, reporter and observer. When they finished designing their activity, they tried it out on the other group. The young men's group developed the following activity: They drew a picture of a clinic on a large sheet of paper and gave this to the participants. Their facilitator asked the participants to draw spokes from this building and to write or draw the queries that a young person would have when going to a clinic (Figure 2).

These young men and women will continue to develop tools over the next few weeks. Their aim is to gather information from a wide variety of young people and from sexual health workers in their area and put together a video which answers questions such as those above. They are concerned about teenage literacy levels and would also like to make a cassette tape to complement sexual health information leaflets. Until they are confident, we will facilitate their activities. They aim to work in schools and youth clubs, on the street where young people congregate, with young people in residential care, with those with specific learning difficulties and with disabilities and if possible, with young people in prison.

● Conclusions: PRA with young people in Britain

Working with young teenagers under the age of 16 in Britain requires planning, but can be enormously satisfying for all concerned. Young people's ability to contribute to decision-making is often underestimated and the process can bolster confidence and self-esteem in some young individuals. The Barnardos publication about children, ethics and social research has been very useful in this respect (Alderson, 1995).

Some additional points to bear in mind include the fact that facilitators and trainers should be 'police checked' to reveal their conviction history; teachers need details of activities well before work can be done in schools and in some cases parental consent is required; in institutions, sufficient numbers of facilitators need to be present so that work can be done simultaneously with the adults in charge; confidentiality is paramount and young people must always be able to choose whether they participate. On the street, young people can just walk away if they don't like the activity. In schools and youth clubs if you can secure a corner during normal recreational activities, participants will be able to come and go as they please. In a formal classroom situation, it is difficult for young people to opt out.

● **Tilly Sellers and Martin Westerby:** Young People and Sexual Health Project, Department of Public Health Medicine, University of Hull, Cottingham Road, Hull HU6 7RX, UK.

REFERENCES

Alderson, P. 1995. *Listening to Children - Children, ethics and social research.* Barnardos, Essex, UK.

Ashton, J. and Seymour, H. 1988. *The New Public Health.* Milton Keynes. Open University Press, UK.

Peach E, Harris J. and Bleiby, E. 1994. *Teenage Pregancy - A Community Issue: A literature Review.* Nuffield Yorkshire Collaborating Centre for Health Services Research, UK.

Pretty J, Gujit I, Thompson J, Scoones I. 1995. *A Trainer's Guide for Participatory Learning and Action.* IIED Participatory Methodology Series, IIED, London, UK.

8

MATERIAL ON HIV/AIDS

SENT BY

MEDICAL MISSION INSTITUTE

UNIT FOR HEALTH SERVICES AND HIV/AIDS

SALVATORSTR. 22

D-97074 WÜRZBURG

GERMANY

Voluntary lay supervisors of directly observed therapy for tuberculosis in Africa

R L Coleman BS MRCP[1]
D Wilkinson MB ChB[1,2]
K P W J McAdam BChir FRCP[3]

[1]*Hlabisa Hospital, P Bag X5001, Hlabisa 3937,* [2]*Centre for Epidemiological Research in South Africa, South African Medical Research Council, PO Box 187, Mtubatuba 3935, South Africa, and* [3]*Department of Clinical Sciences, London School of Hygiene and Tropical Medicine, Keppel Street, London, UK*

TROPICAL DOCTOR, 1998, 28, 78–80

INTRODUCTION

Globally about 3 million people die from tuberculosis (TB) every year[1]. This is tragic as the disease is treatable. The human immunodeficiency virus (HIV) pandemic has dramatically increased the incidence of TB worldwide, particularly in Africa where control programmes are under tremendous strain[2]. The major obstacle to cure and control is the failure of programmes to ensure supervision of therapy and to hold cases until they complete the treatment course[1]. Directly observed therapy (DOT) for TB has become the standard of care in the USA[3] although the idea originated in developing countries[4]. If treatment is supervised throughout, very high cure rates are achieved and very low rates of drug resistance result. In developing countries, where the burden of the disease is greatest, most outpatient treatment is currently unsupervised, supervision being limited to an initial 2 months in-hospital phase[5].

An effective community-based TB treatment programme has been described in Hlabisa, Kwazulu, Natal, South Africa, utilizing twice-weekly therapy that is fully supervised throughout the 6 month course[6,7]. More than half the patients are supervised by voluntary lay people (mainly store-keepers) and their case-holding rates equal those of paid health workers[6,7]. A completion of therapy rate of 85% between 1991 and 1994 has been achieved[7].

Much has been written about the knowledge, attitudes and behaviour of TB patients. Little is known about the motivation of supervisors, especially voluntary lay supervisors.

METHODS

Hlabisa hospital is a 400-bed rural district hospital in Kwazulu, Natal, South Africa. With eight residential village clinics, the district serves around 200 000 people who live in scattered and often isolated kraals, in what is very hilly country. The district is large (approximately 5000 km^2). The tuberculosis programme is run as part of a comprehensive district health system and has been described in detail elsewhere[6,7]. Briefly, all patients with suspected TB are admitted for evaluation and initiation of therapy. Four drugs (isoniazid, rifampicin, pyrazinamide and ethambutol) are given daily in standard doses while in hospital (an average of 2–3 weeks), while arrangements are made for community supervision and clinical condition improves. The same four drugs are given in high dose twice-weekly thereafter (adults: isoniazid 900 mg, rifampicin 600 mg, pyrazinamide 3G, ethambutol 2G), under full supervision.

The choice of supervisor is made by the patient in consultation with the TB team. The most important factor in the choice being the convenience of the patient. Supervisors are usually within easy walking distance: it is important that patients do not have to travel to reach their supervisors. All patients are taken by a field worker (a paid member of the health care team) to their chosen supervisor who then holds all the treatment that is needed for the patient to complete a full 6-month course. Each twice-weekly dose (pre-packed in the hospital dispensary) is ingested in front of the supervisor who records this on the patient's treatment card held by the supervisor. Patients do not attend hospital for routine follow-up during or after treatment, but they are free to attend at any time they feel the need. They are advised about common side-effects and to stop treatment and attend the clinic immediately should they occur. A field worker visits each supervisor monthly to check on compliance of his patients by checking the supervisors' cards: he traces any absconders at this time. The dates of these field visits are not known in advance by the supervisors, which together with occasional random visits, ensures that supervisors do not simply record patients' visits when they know the field worker will be visiting.

A programme audit in 1994 showed that 56% of 60 treated patients were supervised by volunteers, and the rest by paid health workers (Table 1). Most of the volunteers supervising patients were store-keepers (the supervised 43% of all patients receiving DOT in 199

Table 1. Supervision of patients, 1994

Supervisor	*No.*	*(%*
Non-health worker supervisor	339	(56
Store-keepers	260	(43
Lay person	67	(11
Employers	12	(2
Health worker	266	(44
Clinic nurses	139	(23
Community health workers	127	(21
Total	605	(100

Correspondence to: Dr D Wilkinson

see Table 1). Other lay people, such as retired clergy, teachers, nurses, and other 'respected' community members supervised almost all the remaining patients in 1994.

We studied volunteer supervisors by randomly selecting 15 store-keepers from different parts of the district who were supervising patients at the time of the study, and all the five other lay people (not store-keepers) who were also supervising patients at the time of the study. Information was gathered through one-to-one, semi-structured interviews guided by a questionnaire. The interviewer was a senior local nurse who had received basic training in qualitative interviewing methods, and the interviews were conducted in the local language. Responses to questionnaires were analysed by content analysis following the sequence of the questionnaire, with common themes being grouped together.

RESULTS

Six main themes were identified.

Benefits of DOT to individual patients

All supervisors independently and spontaneously identified several different benefits of DOT. They noted that patients were freed from unnecessary hospitalization, could return to fulfil their roles in the family, community and at work, and that compliance was improved. Students on DOT could remain at school, and when adults returned home on DOT, this often freed a child, who had remained at home to help care for smaller children, to return to school.

Two store-keepers commented: 'Patients lack money, motivation and transport to travel to clinics or hospital. It is best that they find treatment close to home'. 'Patients don't get the chance to throw tablets away', and 'I am bad at finishing even a short course of treatment; the intense supervision of DOT is necessary to help people complete the long course'.

The overall positive attitude to DOT was summed up thus: 'I let people come at any time of the day. I let them take their time to swallow tablets and am glad someone is looking out for them in case they get sick again'.

Benefits to the general community

A store-keeper told us, 'The community sees that the people I am supervising have been cured and that they are now well'. All supervisors felt that the whole community benefited by seeing patients managed—and cured—in the community. Further, the importance of compliance was widely recognized, 'people see that patients are cured only if they comply'. A more positive image of TB has developed quickly in the district—decreased stigma, fear and isolation—as treatment completion rates have increased and hospitalization has been reduced.

'The community can see that the disease is curable' one store-keeper related. Supervisors noted that their neighbourhood developed a stronger sense of community when they helped each other through DOT. Another perceived benefit was the 'freeing of hospital beds for those that are more sick'. All supervisors recognized their important community role: being well placed to advise those with symptoms of TB to go to clinic or hospital, to identify new patients (including contacts) and to combat defaulting.

Benefits for the supervisor

All supervisors expressed their real satisfaction at seeing (what they all described as) 'their' patients improving. Supervisors attached great importance to the positive feeling they got from contributing to the well-being of the community.

Interestingly, no specific reference was made to an enhancement of their own status within the community or to financial benefit. In this largely rural area each store has a virtual monopoly on trade in its own area, so patient supervision is unlikely to directly benefit trade. Also most storekeepers only supervise one or two patients at a time. However, a positive relationship with the community can only be of help to the store-keeper.

Unsolicited initiative from supervisors

No supervisors were ever asked to do anything other than hold the course of treatment and record its provision twice-weekly. No role as contact-tracer or default-reporter was ever envisaged.

Nevertheless, on occasion store-keepers gave food to hungry patients who could not take treatment on an empty stomach. Others would go to patients' houses if they failed to attend for treatment. Store-keepers would often provide water (at times from a distant source) to help drug-taking, and they would call patients to the front of the queue to take their treatment. Some asked field staff for more information about TB so they could inform the community. A few even visited defaulters at home to encourage further compliance.

Socio-economic influences on DOT

'Hungry patients lack the strength or motivation to come for treatment'. All supervisors recognized that poverty, lack of food, and alcohol abuse were major problems that often compromised compliance. 'A young person with TB is often the only bread-winner for the entire household'. Most of the patients who do abscond from our DOT programme do so in search of work.

When asked, only two store-keepers felt that payment for their services was appropriate but none insisted on it. Since 1991, and the use of more than 150 different stores, only one store-keeper has refused to supervise patients.

Problems with DOT

The only common complaint offered by supervisors was the large number of tablets (21) that have to be taken on each occasion. No supervisors reported any problems with supervision, and none reported losing or the selling of tablets. Although selling tablets is a real risk, there is no evidence that this actually happens: there is no culture of buying and selling pills in this area, and no patients have ever complained of not getting their treatment.

DISCUSSION

We have carried out a qualitative study to explore the attitudes of voluntary lay supervisors of patients with TB within a rural community-based TB programme in Africa. Completion of treatment rates of 85% have been reported using this method[6,7], and it is important to understand the reasons for this success. DOT was viewed positively by all supervisors: they not only saw their tasks as simple and not causing them trouble, they viewed their experiences positively. All were acutely aware of the direct benefits to the patients (particularly high compliance and rapid return to a normal societal role). Supervisors also recognized the important benefits of DOT to the community, especially the positive influence on community attitude towards TB. The reduction in stigma associated with TB was a strong and commonly expressed theme. Talking in depth to the supervisors highlighted the socio-economic constraints to compliance; poverty, unemployment, lack of food and alcohol abuse.

All supervisors seemed proud of their roles. A sense of willing cooperation came across strongly, and the absence of any desire for remuneration illustrates this. Furthermore, many supervisors did more for 'their' patients than had been asked—they often encouraged patients whose compliance was poor and some even tried to trace absconders. This suggests the possibility of a broader role in TB control for non-health supervisors than we had originally anticipated.

The possible implications of our findings are, we believe, relevant to a wider audience. However, our findings should be applied to other settings with caution. We have developed a simple and effective TB treatment programme, the basis of which is direct observation of each dose by a supervisor very close to the patient's home or work. More than half the supervisors in the programme are volunteers; they all have positive attitudes about, good knowledge of and practice in, the programme. These non-health workers are at least as effective at case holding as paid, trained health workers. We therefore recommend that possible extension of the role of lay supervisors in TB control programmes in different parts of the world should be seriously considered and studied further. The main principles of direct observation and supervision by a person close to the patient's home or place of work (thereby optimizing convenience) could potentially be applied almost anywhere. It is worth noting that our patients do not object to the broader community being aware of their diagnosis. Each site would have to adapt supervisory practice to suit local conditions and practice; the risk of sale of drugs by supervisors for example, will be high in some areas. Towns will provide a different challenge; migrant communities another. Combination tablets and blister pack presentation, would help reduce the sale of individual components and the consequent risks of contributing to an increase in drug resistance. The large number of tablets and the bitter taste of some contribute to poor compliance; so reduction of the number of drugs used in the continuation phase could be helpful. Also, it is important to monitor cure rates, relapse rates and drug resistance rates.

As for the future, we are concerned about the impact HIV infection will have on the 'good-name' of our programme. Already mortality and absconding rates are higher in HIV positive TB patients in this area[8], with many seeking help from traditional healers. Thus, we are considering the possibility of including traditional healers in our network of supervisors so that patients do not have to choose between those from whom they receive care.

ACKNOWLEDGEMENT

This work was supported by the Glaxo Action TB Initiative (project code 5846).

REFERENCES

1 Kochi A. The global tuberculosis situation and the new control strategy of the WHO. *Tubercle* 1991;72:1–6

2 De Cock K, Soro B, Coulibaly IM, Lucas SB. Tuberculosis and HIV infection in sub-Saharan Africa. *JAMA* 1992;268:1581–7

3 Iseman MD, Cohn DL, Sbarbaro JA. Directly observed treatment of tuberculosis. We can't afford not to try it. *N Eng J Med* 1993;328:576–8

4 Bayer R, Wilkinson D. Directly observed therapy for tuberculosis. A history of an idea. *Lancet* 1995;345:1545–8

5 International Union Against Tuberculosis and Lung Disease. *Tuberculosis Guide for High Prevalence Countries, 2nd edn.* Aachen/Paris: Misereor/IUATLD, 1991

6 Wilkinson D. High-compliance tuberculosis treatment programme in a rural community. *Lancet* 1994;343:647–8

7 Wilkinson D, Moore DAJ. HIV-related tuberculosis in South Africa: clinical features and outcome. *S Afr Med J* 1996;86:64–7

8 Wilkinson D, Davies GR, Connolly C. Directly observed therapy for tuberculosis in Africa: a programme audit 1991–1994. *Am J Public Health* 1996;86:1094–7

9

MATERIAL ON HIV/AIDS

SENT BY

MEDICAL MISSION INSTITUTE

UNIT FOR HEALTH SERVICES AND HIV/AIDS

SALVATORSTR. 22

D-97074 WÜRZBURG

GERMANY

Reviews / Analyses

Practical and affordable measures for the protection of health care workers from tuberculosis in low-income countries

A.D. Harries,[1] D. Maher,[2] & P. Nunn[3]

With the global upsurge in tuberculosis (TB), fuelled by the human immunodeficiency virus (HIV) pandemic, and the increase in multidrug-resistant TB, the condition has become a serious occupational hazard for health care workers worldwide. Much of the current understanding about nosocomial TB transmission stems from the USA; however, little is known about the risk of such transmission in low-income countries. The focus of this review is on sub-Saharan Africa, since this is the region with the highest TB incidence, the highest HIV incidence, the worst epidemic of HIV-related TB, and where the risk to health care workers is probably greatest.

Measures used in industrialized countries to control nosocomial TB transmission (ventilation systems, isolation rooms, personal protective equipment) are beyond the resources of low-income countries. Protecting health care workers in these settings involves practical measures relating to diagnosis and treatment of infectious cases; appropriate environmental control; and relevant personal protection and surveillance of health care workers. Research needs to be carried out to examine the feasibility and cost-effectiveness of measures such as voluntary HIV-testing of health care workers (to enable known HIV-positive health care workers to avoid high-risk settings) and isoniazid preventive therapy for workers in high-risk settings. More resources are also needed to ensure full implementation of currently recommended measures to decrease the risk of nosocomial and laboratory-acquired TB.

Risk of TB infection among health care workers in industrialized countries

Background

Before the advent of effective antituberculosis medication, the risk of tuberculosis (TB) among health care workers, particularly those who worked in TB sanatoria, was high. After 1950, this risk declined substantially in industrialized countries because of the decreasing incidence of the disease and the availability of effective antituberculosis chemotherapy. However, since 1985 there have been a number of reported outbreaks of nosocomial TB, particularly in the USA, and the disease has once again become a serious occupational hazard for health care workers. In 1993, a total of 3.2% of TB cases in the USA occurred among such workers (*1*), and many of these cases were occupationally acquired.

There are several reasons for the upsurge of nosocomial TB in industrialized countries (Table 1). Over the last decade there has been a resurgence of the disease in Europe and the USA. The incidence of TB increased by 20% in the USA over the period 1985–92, by 20% in Denmark over the period 1986–92, by 27% in Italy over the period 1988–92 and by 28% in Spain over the period 1990–92 (*2*). Many medical staff with working experience of TB have retired from the health service, leaving a new generation of physicians for whom it is an uncommon disease and low on the list of differential diagnoses. Infection control practices were therefore relaxed or

[1] Professor, College of Medicine, University of Malawi, Chichiri, Blantyre 3, Malawi. Requests for reprints should be sent to Professor Harries at the following address: British High Comission, P.O. Box 30042, Lilongwe 3, Malawi.

[2] Medical Officer, Global Tuberculosis Programme, World Health Organization, Geneva, Switzerland.

[3] Chief, Research and Surveillance, Global Tuberculosis Programme, World Health Organization, Geneva, Switzerland.

Reprint No. 5804

© World Health Organization 1997

Table 1: **Reasons for the increase in nosocomial TB transmission in industrialized countries**

- Resurgence of TB
- Poor hospital infection control practices
- Multidrug-resistant TB
- HIV infection

simply not followed in many hospitals because of the perception that TB was no longer important. The advent of multidrug-resistant TB, particularly in the USA, encouraged its spread within hospitals — not because patients with multidrug-resistant TB are more infectious than those with the drug-sensitive disease, but because first-line antituberculosis drugs are inadequate for its treatment, and patients infected with multidrug-resistant strains may remain infectious longer. Currently, the greatest risk of nosocomial TB transmission is to immunocompromised patients or staff, especially those infected with the human immunodeficiency virus (HIV). Health care workers and patients infected with HIV are more susceptible to TB, and once infected may not be able to contain the infection and may rapidly develop overt disease (*3*, *4*).

The "at risk" health care worker

Nurses were the first occupational group who were identified to be at increased risk for TB and probably have the highest rate of infection and disease of all health care workers (*5*). This is not surprising, in view of the prolonged and often close contact between hospital nurses and patients. Physicians, particularly those aged 20–35 years and specialists in internal medicine, experience substantial rates of tuberculous infection and disease (*6*, *7*). Specialists in respiratory medicine have higher rates of infection than those in other areas (*8*), probably because of the extra risk associated with performing bronchoscopy or caring for ventilated patients in intensive care units. Pathologists represent a further risk group. A study in Japan found a high incidence of TB among pathologists and pathology technicians, with the highest rates being among those who performed or assisted at autopsies (*9*).

Laboratory staff may become infected with TB either through accidental inhalation or inadvertent inoculation. In a review of the global literature, TB was reported to be the sixth most common occupationally acquired infection among laboratory workers (*10*), and it has been estimated that laboratory workers have a two to nine times higher risk of contracting TB than the general public (*11*). Although all these categories of health care worker are at risk regardless of their immune status, those infect with HIV are at much higher risk; for example, o review reported that 8 of 17 health care workers w multidrug-resistant TB were HIV positive (*12*).

Factors associated with nosocomial TB transmission

Common factors associated with TB transmission recent reports of nosocomial outbreaks are shown Table 2 (*12*). Rates of nosocomial transmission a pear to be highest when the diagnosis of TB in ho pitalized patients is delayed, when patients are n receiving adequate therapy, or when there is unre ognized drug resistance. In the USA, the delay diagnosis in hospitals may relate to lack of awarene of TB by physicians, atypical clinical manifestatio (particularly in the setting of HIV infection), or ina equate diagnostic facilities. The most infectious T patients are those with smear-positive pulmona disease, and sputum smear examination should performed as quickly as possible on all TB suspec However, according to one report, sputum smea for acid-fast bacilli were not performed in 16% 641 hospitals in the USA caring for patients with T and routine sensitivity testing of isolates was n performed in 80% of these hospitals (*13*).

Measures to reduce nosocomial TB transmission in industrialized countries

Guidelines issued in 1990 by the Centers for Disea Control and Prevention (CDC) to prevent t

Table 2: **Factors associated with TB transmission health care workers in industrialized countries** (*12*

- *Delay in diagnosis of TB*
- *Procedures associated with aerosolization of tubercle bacill*
  - Intubation
  - Bronchoscopy
  - Sputum induction
  - Mechanical ventilation
  - Jet irrigation of tuberculous abscesses
  - Change of dressings of tuberculous ulcers
  - Autopsies
- *Multidrug-resistant TB*
- *Poor personal protection:*
  - Underuse of masks
- *Poor ventilation processes:*
  - TB isolation-room doors left open
  - Poor ventilation in wards or TB isolation rooms
  - Positive pressure in TB isolation rooms
  - Positive pressure in rooms dispensing aerosolized pentamidine
  - Recirculating ventilation

spread of TB in health care facilities in the USA (*14*) have been used successfully to control several outbreaks of nosocomial multidrug-resistant TB in the USA (*15–19*). The control measures that were effective in one nosocomial outbreak are summarized in Table 3. In 1993 CDC published further draft guidelines proposing new measures to prevent nosocomial TB (*20*). These guidelines have sparked controversy and debate because they include the wearing of respirator masks with high-efficiency particulate air filters (HEPA respirators) by health care workers in isolation rooms for patients with suspected TB. HEPA respirator masks are expensive, and their addition to the other measures recommended by CDC in 1990 offers negligible protective efficacy at great cost (*21*).

Nosocomial TB control must also include the protection of laboratory workers. It is recommended that laboratories which handle specimens containing mycobacteria must provide clear guidelines to laboratory workers for the safe testing of specimens, e.g. guidelines issued for laboratory safety in Europe and the USA (*22–24*). Table 4 shows recommended guidelines for laboratory safety in low income countries (*25*). In industrialized countries failure to adhere to guidelines for preventing spread of TB in health facilities has led to nosocomial transmission to patients and health care workers (*17, 18, 26, 27*) and to laboratory-acquired TB (*23*).

Risk of TB infection among health care workers in developing countries: the example of sub-Saharan Africa

Impact of AIDS and tuberculosis

In July 1996, an estimated 21.8 million adults and children worldwide were living with HIV/acquired immunodeficiency syndrome (AIDS), of whom 20.4 million (94%) were in developing countries (*28*). Sub-Saharan Africa is the region that has been hardest hit by the HIV/AIDS pandemic, with an estimated 14 million persons living with HIV infection. The HIV epidemic is also escalating in Asia, and by mid-1996 there were an estimated 4.8 million persons in Asia living with HIV infection. Worldwide during 1995, a total of 2.7 million new cases of adult HIV infection occurred; and of these, about 1.4 million infections were in sub-Saharan Africa and 1 million in South-east Asia (*28*). Since the beginning of the pandemic up to July 1996, more than 6 million adults have developed AIDS; and of these, 4.5 million have been in sub-Saharan Africa (*28*).

In sub-Saharan Africa HIV-seroprevalences in antenatal clinics doubled in several countries between 1990 and 1994, and in some cities are currently >30% (*29*). In some countries HIV-related disease

Table 3: **Interventions that were effective in reducing nosocomial transmission of multidrug-resistant TB in an HIV ward in the USA** *(15)*

Administrative
Establish a TB control office
Staff the TB control office with a director, public health advisor, and outreach workers
Diagnostic measures
Increase awareness about TB among HIV-positive patients with respiratory illness
Introduce a policy to "rule out TB"
— Place patients with suspected TB or pneumocystis carinii pneumonia or with an abnormal chest radiograph in a TB isolation room
— Restrict sputum induction procedures and aerosolized pentamidine treatments to TB isolation rooms
— Increase staff numbers in mycobacterial laboratories and make routine and urgent acid-fast bacilli smears available every day
Therapeutic measures
Expand initial anti-TB treatment to include four drugs
Allow patients in TB isolation rooms to leave only when medically necessary and ensure that such patients always wear a surgical mask when outside the room
Place automatic closing devices on all TB isolation room doors
Install negative pressure in all TB isolation rooms
Continue isolation of TB patients until at least three negative acid-fast bacilli sputum smears are obtained
Health care worker protection
Forbid immunocompromised staff from working on medical wards
Ensure that all health care workers entering a TB isolation room wear a surgical submicron mask and subsequently a dust-mist particulate respirator mask
Perform tuberculin skin tests on health care workers every 4 months

Table 4: **Laboratory guidelines in low-income countries for safe testing of specimens containing mycobacteria** *(25)*

- Efforts should be made to avoid, minimize or control those laboratory operations which create potentially infectious aerosols
- For maximum protection of laboratory workers, a laboratory safety cabinet should be available for use in the preparation and fixing of smears or for processing specimens for culture
- Each time on entering the laboratory, the laboratory technician should put on a laboratory coat and wash his/her hands with soap and water. Similarly, each time on leaving, the technician should wash his/her hands and leave the coat hanging in the wardrobe
- It is forbidden to smoke or eat in the laboratory or to sit on the tables or benches
- All manipulations for preparing a smear should be completely standardized and the arrangements of the material on the table should always be the same to ensure maximum safety
- The opening of the sputum containers and the preparation of the smears must be done carefully to prevent the formation of aerosols
- Items such as the slide holder, the dryer, and the work surface should be flamed or soaked in a TB germicidal solution, e.g. 5% phenol or a phenol-derivative soap mixture
- All infectious wastes must be decontaminated on disposal

and AIDS are responsible for ≥50% of hospital admissions (*30*). AIDS is the leading cause of adult death in Abidjan, Côte d'Ivoire (*31*), and in rural communities in Uganda (*32*).

Globally, in 1994 more than 4.8 million people were thought to be dually infected with *Mycobacterium tuberculosis* and HIV, with over 75% of them living in sub-Saharan Africa (*33*). The strong association between TB and HIV in this region has led to a large upsurge in the incidence of TB in several sub-Saharan African countries (*34*) and the region now has the highest TB case notification rate (96.8 per 100000) (*34*). TB is one of the major causes of adult morbidity and mortality in the region (*35*), being responsible for large numbers of adult hospital admissions (*30*) and hospital deaths (*36*). Primary drug resistance levels in sub-Saharan Africa vary considerably: such resistance is high and continues to increase in some countries, such as Sierra Leone (*37*), but is low and remains stable in countries with good TB control programmes such as United Republic of Tanzania (*38*) and Malawi (*39*). Fortunately, the phenomenon of multidrug-resistant TB has not yet emerged as a significant threat in sub-Saharan Africa, and despite high HIV-seroprevalences multidrug-resistant TB has not been associated with HIV infection (*39–41*).

Nosocomial TB transmission and risk to health workers

Information is limited about the risk of TB transmission to health care workers in sub-Saharan Africa; however, the risk is likely to be substantial among such workers from a high HIV prevalence population, and therefore with increased susceptibility related to HIV. A study carried out in a central hospital in Blantyre, Malawi, found that 4% of the nurses were diagnosed and treated for TB over the 2-year period 1993–94 (*42*). Over this 2-year period spent working in a particular hospital department, the proportion of nurses who developed TB was significantly higher among those in the medical and TB wards than among those in other hospital departments (13% versus 3%; odds ratio = 5.74). Potential confounding variables were age and HIV status; however, there was no significant difference in age between nurses working in different departments. The nurses' HIV status was not assessed, although it is unlikely that HIV seroprevalence differs sufficiently among nurses working in different departments. Extrapolation of these findings to an annual case notification rate indicates that the rate of TB infection among nurses working in medical and TB wards was 6600 per 100000 — nearly forty times higher than the case notification rate among the general population in Malawi in 1994 (180 per 100000) (source, Malawi National TB Programme). The relative risk of health workers acquiring TB is not known in the absence of data comparing them with a similar group of the general population (excluding health care workers) matched for age and sex; however, health care workers are aged 15–59 years, the age group which accounts worldwide for 70% of all TB cases (*43*). Therefore, the relative risk of HCWs acquiring TB is likely to be

ose to forty times greater than that of the general opulation.

During this 2-year period, over 500 patients dmitted to the general medical wards had smear-ositive pulmonary TB, and there were long delays diagnosing and treating these high-risk patients. he HIV-serostatus of the nursing staff was not de-rmined; however, they are likely to experience the me prevalence of HIV infection as the rest of the dult population, and in 1993, 32% of pregnant omen attending antenatal clinics in Blantyre were IV-seropositive (*44*). It was not possible to deter-ine whether the development of TB in the study urses arose because of reactivation of latent infec-on or from new infection. However, epidemiologi-al studies in the USA have shown that nearly vo-thirds of TB cases among HIV-infected patients ise because of recent transmission, and this is kely also to be the case among nurses working medical wards containing large numbers of ntreated, smear-positive pulmonary TB patients (*45*, *46*).

Morbidity and absenteeism among hospital staff sub-Saharan Africa are high, much of it probably ecause of HIV-related infections (*47*), of which TB one of the predominant conditions. A study in ambia showed that mortality in nurses rose from 2 er 1000 in 1980–85 to 26.7 per 1000 in 1989–91, the crease being attributed to HIV-related disease (*48*).

There is almost no data on the risk of hospital boratory workers in sub-Saharan Africa develop-g TB. In industrialized countries, such workers are increased risk of acquiring TB compared with the eneral population (*11*), and inadequate compliance ith the recommended safety regulations (*22–24*) as led to laboratory-acquired TB (*23*). Since re-ources to implement such regulations are inad-quate in sub-Saharan Africa (*25*), it is likely that boratory workers there are also at increased risk of B infection. For example, safety cabinets for the andling of specimens containing mycobacteria are ot available in most district hospital laboratories, nd district hospital laboratories are usually multi-urpose with no separate area for performing ycobacterial work.

Reducing the risk of TB among health care workers in developing countries: the example of sub-Saharan Africa

he recommendations for controlling nosocomial B transmission in industrialized countries are not, in general, applicable to low-income countries because of the high cost of implementing some of them and because some are inappropriate to the epidemiology of TB in such countries. Nevertheless, because of the need for practical advice that is reasonably effective and which can be implemented in low-income countries WHO provided guidelines in 1993 for the control of TB transmission in health care settings (*49*). These guidelines together with practical measures that have been implemented in some African hospitals where there is concern about nosocomial TB transmission are discussed below.

Diagnosis and treatment of infectious TB patients

The most cost-effective method of interrupting the chain of TB transmission is the rapid diagnosis and treatment of infectious TB patients, i.e. those with smear-positive pulmonary TB. As outlined below, there are several ways of ensuring as early a diagnosis as possible with the least possible risk of transmission of infection to others.

Adherence to criteria for suspected pulmonary TB. In areas where the prevalence of TB is high, which includes virtually all of sub-Saharan Africa, any patient with a cough that lasts >3 weeks should be investigated for pulmonary TB (*25*). This is particularly important if the patient has lost weight and has not responded to a course of antibiotics. It is also recommended that patients with haemoptysis, whatever the duration of symptoms, be investigated for pulmonary TB.

Investigation of TB suspects as outpatients. Many smear-positive TB patients are ambulant up until the time of their treatment (*50*). Admitting TB suspects to hospital to investigate the possibility of the pulmonary form of the disease may be convenient for the health care staff and possibly the patient; however, ambulant patients should be investigated whenever possible in the outpatient setting. Ensuring that all suspects are screened through one office (usually the district TB office), the use of an outpatient cough register, and a laboratory sputum register facilitate the tracing of suspects who are sputum smear-positive. A cough register is used to record the name and address of TB suspects, the date when sputum specimens are submitted, the date when sputum smear results are returned to the cough register personnel, the results of the sputum smear examination, and the date when the TB suspects return to collect the results. Smear-positive pulmonary TB patients who do not return to collect their results can be actively followed up.

Decreasing delays in sputum collection and delivery of results to hospital wards. Many TB suspects are still admitted to medical wards because of late presentation and serious illness. In most African countries, a patient with suspected pulmonary TB is asked to submit three sputum specimens for smear microscopy, which increases the chances of finding tubercle bacilli (*51*). In the past, the standard practice was to request three early morning sputum samples since secretions build up in the airways overnight. However, current recommendations are for the patient to provide three sputum specimens, collected within 24 hours, as follows: "on the spot", early morning, and "on the spot" (see Table 5). Under routine conditions this method is as sensitive as collecting three early morning specimens (*52*). Even using the 24-hour method of sputum collection, significant delays can still occur: medical personnel may not request sputum specimens until several days after the patient is admitted; patients may not receive sputum containers, despite requests for sputum examination; patients may not understand how to submit sputums; collection and delivery of filled sputum containers to the laboratory as well as delivery of smear results back to the wards may be slow (*53*).

One possible solution to these delays is to appoint a ward "cough officer". The salary of such an individual will be low in most sub-Saharan African countries, and the appointment is likely to be cost-effective. The cough officer can be made responsible for all aspects of sputum collection and delivery of results back to the ward and can ensure that smear-positive pulmonary TB patients are registered and started on treatment as soon as the diagnosis is made (see Table 6). This system has been implemented in the medical wards of one of the central hospitals in Malawi, and preliminary evaluation shows that it can significantly reduce the delays in diagnosis and in the initiation of treatment of infectious TB cases (A.D. Harries, personal observations, 1996).

Table 5: **Recommended procedure for 24-hour collection of sputum samples** *(52)*

• Sample 1: Patient provides an "on the spot" sample under supervision when he/she is admitted to the ward
• Sample 2: Patient provides an early morning sample the following morning
• Sample 3: Patient provides another "on the spot" sample under supervision about 2 hours after the early morning sample
All three sputum specimens are then taken to the laboratory for sputum smear microscopy

Table 6: **Duties of a ward "cough officer"**

• Identification of TB suspects on the ward on a daily basis, morning and afternoon with help of nursing and clinical staff
• Giving sputum containers promptly to suspected TB patients and educating them about sputum specimens, i.e. "on the spo early morning, and "on the spot"
• Taking sputum specimens with the completed sputum reque forms every morning to the laboratory
• Collecting sputum results every morning from the laboratory and filing these in patients' case notes
• For smear-positive pulmonary TB patients, taking the file, sputum result form, and patient for registration and start of treatment with the district TB officer as soon as the diagnosis made
• Giving formal education sessions on a daily basis to all TB suspects in the medical ward
• Recording in a dedicated ward "cough register" the patient's name, age, sex, address, date of sputum containers given to patient, date of filled sputum containers sent to laboratory, da and results of sputum smear examination, and date of smear-positive patients being started on antituberculosis treatment

Decreasing delays in laboratory smear micr copy. Most hospital laboratories in resource-po countries stain sputum smears using the Zie Neelsen method and examine for acid-fast bac (AFB) using light microscopy. Central hospitals w busy laboratories can speed up the diagnosis of p monary TB by investing in a fluorescent microsco using a auramine-phenolic or auramine–rhodam stain; this has the advantage that smears can scanned under low magnification and more sme can be examined in a given period of time compa with the Ziehl–Neelsen stain (*51*). All laborato should try to perform smear microscopy and patch the results on the same day that sputum sp mens are received.

Improving the safety of sputum smear microscopy laboratory workers. The exterior of sputum conta ers may be contaminated at the time of expecto tion (*54*), and laboratory workers should clean outside of such containers with a suitable disinf ant before opening and processing them. A meth to improve the sensitivity of sputum smear diagn that has been successfully tested in Ethiopia invol dissolving the sputum in household bleach (aque solution of sodium hypochlorite) and concen ting the bacteria by centrifugation (*55*); hou hold bleach is a potent disinfectant and rapidly k tubercle bacilli. This method may have the ad advantage of lowering the risk of laboratory in tion, especially in hospitals that do not have sa cabinets.

Isolation of infectious TB patients. Ideally, patients suspected to have pulmonary TB should be isolated from other patients without TB. Isolation rooms are not usually available in busy medical wards; however, since close proximity to an infectious case is a risk factor for acquiring tuberculous infection (*56*), patients with suspected pulmonary TB can be kept together in one area of the ward that is screened off from other sections, particularly those occupied by patients with known or suspected HIV/AIDS infection.

Once hospitalized patients are diagnosed to have smear-positive pulmonary TB, they should be isolated, during the initial phase of treatment, from those without TB. It is particularly important that infectious patients are isolated from those most susceptible to TB, i.e. immunosuppressed patients and infants. In institutions with large numbers of patients (most hospitals in Africa), this is best done by establishing a TB ward. Immunocompetent patients with drug-sensitive tubercle bacilli rapidly become noninfectious following a short-course of chemotherapy (this occurs in about 2 weeks). The bacillary response to treatment is at least as good for HIV-positive as for HIV-negative patients (*57*). However, this may not apply to TB patients with drug-resistant bacilli, and since most hospitals have no facilities for mycobacterial culture and drug sensitivity analysis it is preferable to continue to isolate all smear-positive patients until they have become sputum-smear negative.

Use of short-course chemotherapy for smear-positive pulmonary TB. Standard chemotherapy of 12 months' duration using cheap drugs such as streptomycin, isoniazid, and thioacetazone or ethambutol is still employed in a number of countries in sub-Saharan Africa to treat all cases of TB. Patients on standard chemotherapy experience a delay in sputum-smear conversion from positive to negative, and at the end of 2 months' treatment, approximately 50% of patients are still sputum-smear-positive (*35*). Short-course chemotherapy of 6–8 months' duration using multiple drugs such as rifampicin, isoniazid, pyrazinamide and streptomycin (or ethambutol) is much more effective, and after 2 months' therapy 85–95% of patients become smear-negative, irrespective of their HIV serostatus (*41*, *58*, *59*) Short-course chemotherapy should, wherever possible, be used for all smear-positive pulmonary TB cases.

Environmental control

One of the most effective measures to reduce TB transmission is proper ventilation.

TB wards and other high-risk areas in the hospital. TB wards and general medical wards with suspected pulmonary TB patients should have plenty of light, many windows that open to the outside, and doors to other parts of the hospital that are kept closed most of the time. Exhaust fans that move air from wards to the outside are useful, but may be too costly for many health care institutions. The same principles apply to outpatient clinics and to rooms in which sputum-induction procedures are carried out.

Some authorities have recommended that ultraviolet (UV) lights be installed in areas where TB transmission is likely. Although there is experimental evidence that UV light has a germicidal effect on tubercle bacilli (*60*), its effectiveness in reducing TB transmission has not been confirmed in practice. UV lights are also expensive, require proper maintenance, and are potentially harmful if not installed properly. Sunlight is a cheap source of UV light, is in plentiful supply in most parts of Africa, and reinforces the recommendation that wards should have large windows that allow plenty of sunlight to penetrate.

Laboratories. Laboratories which process sputum specimens for acid-fast bacilli should wherever possible follow published guidelines to minimize TB transmission to laboratory workers (*25*). As far as resources permit, the measures listed in Table 4 should be implemented.

Protecting the health care worker

Health care workers must know about TB and about the risks and dangers posed by patients with the pulmonary form of the disease, especially those who are sputum-smear-positive. National TB programme managers and trainers must make this information available. The measures outlined below should be considered for personal protection.

- *HIV-infected staff should avoid working with TB patients and TB specimens.* Health care workers with HIV infection are at increased risk of acquiring tuberculous infection and of progressing to a TB disease state (*3*, *4*). While it used to be commonly believed that TB in HIV-infected persons was due to reactivation of latent infection, studies from the USA using molecular epidemiology techniques have shown that in about two-thirds of HIV-infected persons TB is due to recent transmission rather than reactivation of disease (*45*, *46*). In sub-Saharan Africa the proportions of TB cases that arise from recent infection, reactivation, and re-infection are not known.

Health care workers posted to general medical wards or TB wards, and laboratory staff who work

with mycobacterial specimens could be offered confidential HIV testing with pre- and post-test counselling. If they are HIV-seropositive, they should be moved to other safer areas within the hospital; laboratory staff should be transferred from mycobacterial work. In countries where HIV infection still carries a social stigma, it is likely that many health care workers, particularly women, will not come forward for voluntary HIV testing. One study in Kenya found that 65% of women tested after giving their informed consent did not actively request their results, less than one-third informed their partners, and violence against women because of a positive HIV-antibody test was common (*61*). Several women were also chased away from home or replaced by another wife upon informing their partners that they were HIV seropositive. These cultural attitudes are likely to dissuade female health care workers from seeking HIV testing.

Another approach is for hospitals to advise health care workers who exhibit some of the clinical features (*62*) shown in Table 7 to request transfer from high-risk environments. The presence of these clinical features strongly suggests infection with HIV, but avoids the definitive knowledge which accompanies the results of an HIV-antibody test. Since most people living with HIV infection are asymptomatic, this measure only has the potential to prevent exposure to TB in a small proportion of HIV-infected health care workers.

• *Face masks.* HEPA masks ensure protection against TB by filtering out droplet nuclei of diameter 1–5μm. In the USA their use is recommended by CDC for workers caring for patients with possible TB in isolation rooms (*20*); however, since ea mask costs US$5–7, no low-income country in Afri could afford to use them for widespread nosocomi TB control (*21*, *63*, *64*). Standard surgical masks ha been developed to prevent the exhalation of par cles, and while they are effective in doing so, the efficacy in preventing the inhalation of droplet nuc containing AFB of diameter 1–5μm is less than 50 (*65*). Nevertheless, the use of such masks by T patients with a productive cough who are bei transported to other areas of the hospital for inves gations such as chest radiographs may help to redu transmission of the disease. Routine use of su masks by staff or ward visitors is not generally re ommended, although they may be of some help f staff supervising coughing procedures.

• *Patient cough hygiene.* Educating patients to pla a hand in front of their mouth when coughing a ensuring that coughing patients are examined wi their heads turned away from the health worker a hygienic measures of unproven benefit, but whi are simple to implement.

• *Screening of health care staff for infection and d ease.* Tuberculin skin testing at regular intervals h been recommended as a means of providing surve lance of health care workers in the USA (*12*, *1* Individuals who develop tuberculin skin test conv sions are offered chemoprophylaxis to prevent acti disease. However, even in the USA this measure controversial because many workers do not comp with screening requirements, the prevalence of t positive tests is low, and in consequence the cost p case of TB prevented is high. Moreover, less th 25% of personnel identified by tuberculin screeni complete at least 6 months of antituberculo chemotherapy (*12*).

Surveillance of health care staff in areas of h TB prevalence by regular tuberculin testing is pr ably of little value. Since the annual risk of infecti in sub-Saharan Africa is 1.5–2.5% (*66*), and w >50% of over-15-year-olds giving positive tuber lin tests (*67*), many health care workers will alre have a positive skin test. BCG vaccination cover in infancy is high (*68*) and this makes the interpre tion of the tuberculin skin test difficult. Cutane anergy is also common among immunosuppres TB patients: in one study in Zaire, >50% of H positive pulmonary TB patients with a CI lymphocyte count <200 per μl had a negative tub culin skin test (*69*). Regular screening using ch radiographs every 6–12 months is also probably cost-effective. A few early lesions may be identif but in the absence of symptoms it will be difficul interpret the significance of these findings.

Table 7: **Clinical features indicating suspected HIV infection** *(62)*

Past history:
Sexually transmitted disease
Herpes zoster
Recurrent pneumonia
Bacteraemia (especially *Salmonella typhimurium*)
Symptoms:
Weight loss (>10 kg or >20% of original weight)
Diarrhoea (>1 month)
Pain on swallowing (suggests oesophageal candida)
Painful feet (suggests peripheral neuropathy)
Signs:
Herpes zoster scar
Pruritic papular rash
Kaposi's sarcoma
Symmetrical generalized lymphadenopathy
Oral candidiasis
Oral hairy leukoplakia
Genital ulceration

Symptoms in TB patients develop soon after the onset of disease (*35*). The most cost-effective way of screening, therefore, is to follow rigorously the guidelines for screening TB suspects recommended by the International Union against Tuberculosis and Lung Disease (IUATLD) (*25*) and WHO (*70*), and to treat health care workers as soon as active TB is confirmed. Posting large notices in all the wards, and distributing pamphlets to health care workers informing them that if they have a cough for longer than 3 weeks which has not responded to a course of antibiotics they must report to the designated medical attendant responsible for staff, might assist in reminding such workers about the importance of nosocomial TB.

• *Use of BCG vaccine.* In the USA there has been renewed interest in the use of BCG vaccine to prevent TB among health care workers. However, a recent decision analysis favoured tuberculin skin testing and preventive therapy over use of BCG vaccine (*71*). This is because of the variable protective efficacy of BCG (0–80%) when tested in controlled trials (*72*), and because when given to adults the vaccine makes subsequent skin reactions to tuberculin uninterpretable.

In low-income countries, the majority of health care workers will have received BCG vaccine at birth or as part of the expanded programme on immunization (EPI) during the first 5 years of life (*68*). The questions then arise of whether revaccination with BCG confers additional protective efficacy against TB and whether BCG vaccination of adult HIV-positive individuals is safe. In 1995 WHO discouraged the use of BCG revaccination on the basis of lack of evidence for additional protection over and above that resulting from a first vaccination (*73*). Observations from a recent community-based study in Malawi have supported these recommendations, and have shown that BCG revaccination, while providing additional protection against leprosy, offers no protection against TB (*74*).

There have been several case reports of BCG complications involving patients with AIDS, but prospective cohort studies comparing such complications in HIV-positive and HIV-negative children vaccinated with BCG have found no differences between these groups (*75, 76*). Based on this information, current recommendations by WHO are that BCG vaccine can safely be given to children with asymptomatic HIV infection but that it should be withheld from children with clinical AIDS or with symptomatic HIV infection (*77*). In the Malawi study discussed above, BCG revaccination of adults appeared to increase the risk of pulmonary TB among HIV-positive individuals (*74*). Although this may have been a chance observation, if harm is added as an additional consideration the argument against revaccination becomes even stronger (*78*). At present, BCG revaccination as a means of preventing TB in health care workers cannot be recommended.

• *Isoniazid preventive therapy.* Two placebo-controlled trials have shown that isoniazid given at a dose of 300 mg daily for either 6 months or 12 months to asymptomatic HIV-infected persons significantly reduces the annual rate of TB, particularly among those with positive tuberculin skin tests (*79, 80*). Isoniazid preventive therapy may rarely be associated with hepatitis; the risk of this complication is low, however, although it is greater for over-50-year-olds and for those who are heavy drinkers (*81*). In a study of isoniazid preventive therapy in Uganda, no case of isoniazid toxicity requiring cessation of treatment was observed (*82*).

At present, WHO and the IUATLD hold that there is insufficient information to recommend implementation of isoniazid preventive therapy for coinfected (TB/HIV) persons as one of the components of the TB control strategy in programme settings worldwide (*83*). However, WHO currently recommends that isoniazid can be used in tuberculin-positive, HIV-infected persons who do not have active TB (*83*).

Research is necessary to evaluate the feasibility and cost-effectiveness of a policy of offering isoniazid preventive therapy for health care workers while they are being exposed to infectious TB cases. Implementation of such a policy would require thoughtful deliberation of the criteria for selecting which health care workers in which departments should receive isoniazid preventive therapy and of the duration of such therapy. Voluntary HIV testing is unlikely to be widely accepted and tuberculin skin tests will probably be positive in the majority of adult health care workers. All "at-risk" staff should therefore have active TB excluded by a medical examination and a normal chest radiograph, and, provided they have no evidence of liver disease or heavy alcohol consumption, should commence regular isoniazid preventive therapy at a dose of 300 mg daily. If staff subsequently develop symptoms compatible with pulmonary or extrapulmonary TB, appropriate investigations should be carried out and if the TB is confirmed, preventive therapy should be stopped and treatment commenced.

Conclusions

The factors associated with nosocomial transmission of TB in industrialized countries are now well

known, and the measures required to control or prevent outbreaks of the disease in health care facilities and laboratories have been tested and are of proven value. However, severe resource constraints limit the relevance of these measures in low-income countries. In such countries, particularly in areas of sub-Saharan Africa where the prevalence of HIV/TB is high, there is still much information that needs to be gathered. There is an urgent need to quantify the risk of TB to health care workers in hospital wards, clinics, X-ray departments and laboratories, and to determine the factors responsible for spread of TB.

Operational research is necessary to test and evaluate inexpensive, sustainable, and cost-effective control measures. Ministries of health and national TB programmes need to consider contentious measures, including voluntary testing of health care workers for HIV infection (in order to relocate HIV-infected staff to low-risk areas) and instituting isoniazid preventive therapy for those workers at particular risk of TB, to determine whether these measures really do protect health care workers from TB. More resources are needed to enable full implementation of currently recommended measures to decrease the risk of nosocomial TB transmission and of laboratory-acquired TB. Health care workers are a vital resource and are scarce in many countries; it is therefore vital to retain their services to protect them against the risk of occupationally acquired TB.

Acknowledgement

We thank Dr N. Binkin, Dr P. Gondrie, and Dr J. van Gorkom for their helpful comments on the manuscript.

Résumé

Des mesures pratiques et abordables pour protéger contre la tuberculose le personnel soignant des pays à faible revenu

La résurgence mondiale de la tuberculose, qu'alimente la pandémie d'infections par le virus de l'immunodéficience humaine (VIH) et qu'aggrave l'apparition de souches de *Mycobacterium tuberculosis* polypharmacorésistantes, fait de la tuberculose un sérieux risque professionnel pour le personnel soignant de toutes les régions du monde.

Les auteurs font le point des connaissances actuelles sur la transmission nosocomiale de la tuberculose et examinent les méthodes qui permettent d'y faire efficacement obstacle, notamment aux Etats-Unis, en cherchant à déterminer dans qu mesure elles sont transposables aux pays à fa revenu.

En fait, l'étude porte essentiellement sur pays africains au sud du Sahara car c'est d cette région que l'incidence de la tuberculose celle de l'infection à VIH sont les plus fortes, l'épidémie de tuberculose liée au VIH est la p grave et que le personnel soignant court v semblablement le plus de risque d'être contam Alors même que, dans ces pays, le personnel gnant court un risque non négligeable de conta nation tuberculeuse nosocomiale en raison d' sensibilité plus élevée due à la prévalence du et de la surpopulation fréquente des établisseme de soins, l'information relative à ce type de tra mission reste limitée. Ainsi, une étude effect au Malawi a révélé que l'incidence annuelle d tuberculose parmi les infirmières des services médecine était de 6600 pour 100000, soit près 40 fois plus que dans la population générale (pour 100000). Les mesures de lutte contre la c tamination nosocomiale qui sont mises en oeu dans les pays industrialisés, comme l'améliora des systèmes de ventilation, l'installation de sa d'isolement, et le port d'un équipement indivi de protection, sont hors de portée de la plupart hôpitaux d'Afrique subsaharienne. Il n'empê que la mise en place de mesures destinée protéger le personnel soignant est devenue d' urgente necessité. Il faudrait également que s' taure un large débat sur des suggestions ou commandations qui pourraient être faites au s des questions suivantes: dépistage et traiten des cas contagieux de tuberculose, aménagem des locaux pour lutter contre la transmission, tection individuelle et surveillance médicale personnel soignant. Il serait souhaitable d'élab une stratégie en vue d'identifier les organis de financement, les centres de recherche et programmes de lutte antituberculeuse qui sera prêts à se lancer dans la recherche opérationn Celle-ci devrait porter sur la faisabilité et la tabilité des mesures de lutte contre la contam tion nosocomiale, comme le test VIH volon chez les soignants (de manière à réaffecter personnes porteuses du virus dans des serv moins exposés) et la prophylaxie à l'isoniazide le personnel en poste dans des secteurs à risque. Dans l'ensemble du monde, la lutte tuberculeuse manque visiblement de moyens. ressources supplémentaires sont nécessaires que les mesures permettant de réduire le risqu contamination tuberculeuse en milieu hospi ou au laboratoire puissent être intégralement m en oeuvre.

References

1. **Centers for Disease Control and Prevention.** Expanded tuberculosis surveillance and tuberculosis morbidity — United States, 1993. *Morbidity and mortality weekly report*, 1994, **43** (20): 361–366.
2. *TB — a global emergency: WHO report on the TB epidemic.* Geneva, World Health Organization, 1994, unpublished document WHO/TB/94.177 (available upon request from Global Tuberculosis Programme, World Health Organization, 1211 Geneva 27, Switzerland).
3. **Di Perri G et al.** Nosocomial epidemic of active tuberculosis among HIV-infected patients. *Lancet*, 1989, **2**: 1502–1504.
4. **Daley CL et al.** An outbreak of tuberculosis with accelerated progression among persons infected with the human immunodeficiency virus. *New England journal of medicine*, 1992, **326**: 231–235.
5. **Mikol EX et al.** Incidence of pulmonary tuberculosis among employees of tuberculosis hospitals. *American review of tuberculosis*, 1952, **66**: 16–27.
6. **Gieseler PJ et al.** Tuberculosis in physicians: a continuing problem. *American review of respiratory disease*, 1986, **133**: 773–778.
7. **Barrett-Connor E.** The epidemiology of tuberculosis in physicians. *Journal of the American Medical Association*, 1979, **241**: 33–38.
8. **Malasky C et al.** Occupational tuberculosis infections among pulmonary physicians in training. *American review of respiratory disease*, 1990, **142**: 505–507.
9. **Sugita M et al.** Pulmonary tuberculosis: an occupational hazard for pathologists and pathology technicians in Japan. *Acta pathologica Japoncia*, 1990, **40**: 116–127.
10. **Pike RM.** Laboratory-associated infections: incidence, fatalities, causes, and prevention. *Annual review of microbiology*, 1979, **33**: 41–66.
11. **Collins HC.** *Laboratory-acquired infections*, 2nd edit. London, Butterworth, 1988.
12. **Menzies D et al.** Tuberculosis among health care workers. *New England journal of medicine*, 1995, **332**: 92–98.
13. Respiratory protection: are there any answers out there? *Technology for respiratory therapy*, 1994, **14**: 1–5.
14. **Dooley SW Jr et al.** Guidelines for preventing the transmission of tuberculosis in health-care settings, with special focus on HIV-related issues. *Morbidity and mortality weekly report*, 1990, **39** (RR-17): 1–29.
15. **Wenger PN et al.** Control of nosocomial transmission of multidrug-resistant *Mycobacterium tuberculosis* among health care workers and HIV-infected patients. *Lancet*, 1995, **345**: 235–240.
16. **Beck-Sague C et al.** Hospital outbreak of multidrug-resistant *Mycobacterium tuberculosis*: factors in transmission to staff and HIV-infected patients. *Journal of the American Medical Association*, 1992, **268**: 1280–1286.
17. **Fischl MA et al.** An outbreak of tuberculosis caused by multiple-drug resistant tubercle bacilli among patients with HIV infection. *Annals of internal medicine*, 1992, **117**: 177–183.
18. **Pearson ML et al.** Nosocomial transmission of multidrug-resistant *Mycobacterium tuberculosis*: a risk to patients and health care workers. *Annals of internal medicine*, 1992, **117**: 191–196.
19. **Edlin BR et al.** An outbreak of multidrug-resistant tuberculosis among hospitalized patients with acquired immunodeficiency syndrome. *New England journal of medicine*, 1992, **326**: 1514–1521.
20. **Centers for Disease Control.** *Draft guidelines for preventing the transmission of tuberculosis in health care facilities*, 2nd ed. *Federal Register*, 1993, **58**: 52810–52854.
21. **Adal KA et al.** The use of high-efficiency particulate air-filter respirators to protect hospital workers from tuberculosis: a cost-effectiveness analysis. *New England journal of medicine*, 1994, **331**: 169–173.
22. *Code of practice for the prevention of infection in clinical laboratories and post-mortem rooms.* London, HMSO, 1978.
23. **Peerbooms PGH et al.** Laboratory-acquired tuberculosis. *Lancet*, 1995, **345**: 1311–1312.
24. **Groschel DHM, Strain BA.** Laboratory safety in clinical microbiology. In: Balows A et al., eds. *Manual of clinical microbiology*, 5th edit. Washington, DC, American Society of Microbiology, 1991: 49–58.
25. **Enarson DA et al.** *Tuberculosis guide for low income countries*, 4th edit. Paris, International Union against Tuberculosis and Lung Disease, 1996.
26. **Dooley SW et al.** Nosocomial transmission of tuberculosis in a hospital unit for HIV-infected patients. *Journal of the American Medical Association*, 1992, **267**: 2632–2634.
27. **Griffith DE et al.** Tuberculosis outbreak among healthcare workers in a community hospital. *American journal of respiratory and critical care medicine*, 1995, **152**: 808–811.
28. *The AIDS Control and Prevention (AIDSCAP) Project of Family Health International and the Francois-Xavier Bagnoud Center for Health and Human Rights of the Harvard School of Public Health. The status and trends of the Global HIV/AIDS Pandemic.* Geneva, UNAIDS, 1996.
29. Death by denial. *Lancet*, 1995, **345**: 1519–1520.
30. **Tembo G et al.** Bed occupancy due to HIV/AIDS in an urban hospital medical ward in Uganda. *AIDS*, 1994, **8**: 1169–1171.
31. **De Cock KM et al.** AIDS — the leading cause of adult death in the West African city of Abidjan, Ivory Coast. *Science*, 1990, **249**: 793–796.
32. **Mulder DW et al.** Two-year HIV-1 associated mortality in a Ugandan rural population. *Lancet*, 1994, **343**: 1021–1023.
33. *The HIV/AIDS and tuberculosis epidemics: implications for TB control.* Geneva, World Health Organization, unpublished document WHO/TB/CARG (4)/94.4. (available upon request from Global Tuberculosis Programme, World Health Organization, 1211 Geneva 27, Switzerland).
34. *Tuberculosis — a global emergency: case notification update, February 1996.* Geneva, World Health

Organization, unpublished document WHO/TB/96.197 (available upon request from Global Tuberculosis Programme, World Health Organization, 1211 Geneva 27, Switzerland).

35 **Murray CJL, Styblo K, Rouillon A.** Tuberculosis in developing countries: burden, intervention and cost. *Bulletin of the International Union against Tuberculosis and Lung Disease*, 1990, **65**: 2–20.

36 **Harries AD, Mvula B.** The changing pattern of mortality in an African medical ward. *Tropical and geographical medicine*, 1995, **47**: 171–174.

37 **Gibson J.** Drug-resistant tuberculosis in Sierra Leone. *Tubercle*, 1986, **67**: 119–124.

38. **Chum HJ et al.** An epidemiological study of tuberculosis and HIV infection in Tanzania. *AIDS*, 1996, **10**: 299–309.

39. **Glynn JR et al.** Patterns of initial and acquired antituberculosis drug resistance in Karonga district, Malawi. *Lancet*, 1995, **345**: 907–910.

40. **Braun MM et al.** HIV infection and primary resistance to antituberculosis drugs in Abidjan, Côte d'Ivoire. *AIDS*, 1992, **6**: 1327–1330.

41. **Perriens JH et al.** Pulmonary tuberculosis in HIV-infected patients in Zaire. A controlled trial of treatment for either 6 or 12 months. *New England journal of medicine*, 1995, **332**: 779–784.

42. **Harries AD et al.** Delays in the diagnosis and treatment of smear-positive tuberculosis and incidence of tuberculosis in hospital nurses, Blantyre, Malawi. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 1997, **91**: 15–17.

43. **Dolin PJ, Raviglione MC, Kochi A.** Global tuberculosis incidence and mortality during 1990–2000. *Bulletin of the World Health Organization*, 1994, **72**: 213–220.

44. **Taha TE et al.** Research on human immunodeficiency virus (HIV) in Malawi: the Johns Hopkins University — Ministry of Health (JHU — MOH) project. *Malawi medical journal*, 1994, **10**: 6–11.

45. **Small P et al.** The epidemiology of tuberculosis in San Francisco. A population-based study using conventional and molecular methods. *New England journal of medicine*, 1994, **330**: 1703–1709.

46. **Alland D, Kalkut GE, Moss AR.** Transmission of tuberculosis in New York City. An analysis by DNA fingerprinting and conventional epidemiologic methods. *New England journal of medicine*, 1994, **330**: 1710–1716.

47. The impact of HIV on delivery of health care in sub-Saharan Africa: a tale of secrecy and inertia. *Lancet*, 1995, **345**: 1315–1317.

48. **Buve A et al.** Mortality among female nurses in the face of the AIDS epidemic: a pilot study in Zambia. *AIDS*, 1994, **8**: 396.

49. Control of tuberculosis transmission in health care settings: joint statement of the WHO Tuberculosis Programme and the International Union against Tuberculosis and Lung Disease. *Weekly epidemiological record*, 1993, **68** (50): 369–371.

50. **Pocock D, Khare A, Harries AD.** Case holding for tuberculosis in Africa: the patients' perspective. *Lancet*, 1996, **347**: 1248.

51 **Toman K.** *Tuberculosis case-finding and chemotherapy: questions and answers*. Geneva, World Health Organization, 1979.

52. **Harries AD et al.** Sputum smears for diagnosis of smear-positive pulmonary tuberculosis. *Lancet*, 1996, **347**: 834–835.

53. **Clive S.** Sputum smear examination on a medical ward. *Malawi medical journal*, 1993, **9**: 17–18.

54. **Allen BW, Darrell JH.** Contamination of specimen container surfaces during collection. *Journal of clinical pathology*, 1983; **36**: 479–481.

55. **Gebre N et al.** Improved microscopical diagnosis of pulmonary tuberculosis in developing countries. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 1995, **89**: 191–193.

56. **Kenyon TA et al.** Transmission of multidrug-resistant *Mycobacterium tuberculosis* during a long airplane flight. *New England journal of medicine*, 1996, **334**: 933–938.

57. **Brindle RJ et al.** Quantitative bacillary response to treatment in HIV-associated pulmonary tuberculosis. *American review of respiratory disease*, 1993, **147**: 958–961.

58. **Colebunders RL et al.** HIV infection in patients with tuberculosis in Kinshasa, Zaire. *American review of respiratory disease*, 1989, **139**: 1082–1085.

59. **Eriki PP et al.** The influence of human immunodeficiency virus infection on tuberculosis in Kampala, Uganda. *American review of respiratory disease*, 1991, **143**: 185–187.

60. **Ripley RL, Knight M, Middlebrook G.** Ultraviolet susceptibility of BCG and virulent tubercle bacilli. *American review of respiratory disease*, 1976, **113**: 413–418.

61. **Temmerman M et al.** The right not to know HIV-test results. *Lancet*, 1995, **345**: 369–370.

62. **Harries AD, Maher D.** *TB/HIV — a clinical manual*. Geneva, World Health Organization, unpublished document WHO/TB/96.200 (available upon request from Global Tuberculosis Programme, World Health Organization, 1211 Geneva 27, Switzerland).

63. **Nettleman MD et al.** Tuberculosis control strategies: the cost of particulate respirators. *Annals of internal medicine*, 1994, **121**: 37–40.

64. **Gatanzaro A.** Preventing nosocomial transmission of tuberculosis. *Lancet*, 1995, **345**: 204–205.

65. **Chen CC, Willeke K.** Aerosol penetration through surgical masks. *American journal of infection control*, 1992, **20**: 177–184.

66. **Cauthen GM, Pio A, ten Dam HG.** Annual risk of tuberculosis infection. Geneva, World Health Organization, 1988, unpublished document WHO/TB/88.154 (available upon request from Global Tuberculosis Programme, World Health Organization, 1211 Geneva 27, Switzerland).

67. **Sudre P, ten Dam G, Kochi A.** Tuberculosis: a global overview of the situation today. *Bulletin of the World Health Organization*, 1992, **70**: 149–159.

68. *WHO Global Programme for Vaccines and Immunization, Scientific Advisory Group of Experts, ad hoc Meeting, 17–19 September 1994*. Geneva, World Health Organization, unpublished document

WHO/GPR/GEN/94.1 (available upon request from Global Programme for Vaccines and Immunization, World Health Organization, 1211 Geneva 27, Switzerland).

69. **Mukadi Y et al.** Spectrum of immunodeficiency in HIV-1-infected patients with pulmonary tuberculosis in Zaire. *Lancet*, 1993, **342**: 143–146.
70. *Treatment of tuberculosis: guidelines for national programmes*, 2nd edit. Geneva, World Health Organization, 1993. Geneva, World Health Organization, unpublished document WHO/TB/97.220 (available upon request from Global Tuberculosis Programme, World Health Organization, 1211 Geneva 27, Switzerland).
71. **Jordan TJ et al.** BCG in tuberculosis prevention: a decision analysis addressing inoculation of U.S. house officers in light of multidrug-resistant strains. *American journal of respiratory and critical care medicine*, 1994, **149**: A855.
72. **Fine PEM.** Variation in protection by BCG: implication for heterologous immunity. *Lancet*, 1995, **346**: 1339–1345.
73. **World Health Organization. Global Tuberculosis Programme and Global Programme on Vaccines.** Statement on BCG revaccination for the prevention of tuberculosis. *Weekly epidemiological record*, 1995, **70** (32): 229–231.
74. **Karonga Prevention Trial Group.** Randomized controlled trial of single BCG, repeated BCG, or combined BCG and killed *Mycobacterium leprae* for prevention of leprosy and tuberculosis in Malawi. *Lancet*, 1996, **348**: 17–24.
75. **Weltman AC, Rose DN.** The safety of Bacille–Calmette–Guérin vaccination in HIV infection and AIDS. *AIDS*, 1993, **7**: 149–157.
76. **Lallemant-le Couer S et al.** Bacillus-Calmette-Guérin immunization in infants born to HIV-1 seropositve mothers. *AIDS*, 1991, **5**: 195–199.
77. **Global Programme on AIDS and Tuberculosis Programme.** Statement on AIDS and tuberculosis. *Weekly epidemiological record*, 1989, **64** (17): 125–131.
78. **Rieder HL.** Repercussions of the Karonga prevention trial for tuberculosis control. *Lancet*, 1996, **348**: 4.
79. **Wadhawan D et al.** Preventive tuberculosis chemotherapy with isoniazid (INH) among patients infected with HIV-1. Paper presented at: *Ninth International Conference on AIDS in affiliation with the Fourth STD World Congress, Berlin, 6–11 June, 1993*. Abstract PO-BO7-1114.
80. **Pape JW et al.** Effect of isoniazid prophylaxis on incidence of active tuberculosis and progression of HIV infection. *Lancet*, 1993, **342**: 268–272.
81. **Kopanoff DE, Snider DE, Caras GJ.** Isoniazid-related hepatitis. A U.S. Public Health Service cooperative surveillance study. *American review of respiratory disease*, 1978, **117**: 991–1001.
82. **Aisu T et al.** Preventive chemotherapy for HIV-associated tuberculosis in Uganda: an operational assessment at a voluntary counselling and testing centre. *AIDS*, 1995, **9**: 267–273.
83. **World Health Organization.** Tuberculosis preventive therapy in HIV-infected individuals. *Weekly epidemiological record*, 1993, **68** (49): 361–364.

11

MATERIAL ON HIV/AIDS

SENT BY

MEDICAL MISSION INSTITUTE

UNIT FOR HEALTH SERVICES AND HIV/AIDS

SALVATORSTR. 22

D-97074 WÜRZBURG

GERMANY

The international newsletter on child health and disease prevention

CHILD HEALTH

DIALOGUE

Incorporating ARI News and Dialogue on Diarrhoea

2nd and 3rd quarter 1996 Double issue 3 and 4

Saving lives in hospital

Parents, especially mothers, are partners in the care of sick children.

This double issue of *CHD* describes how to assess and treat seriously ill children who are admitted to hospitals and who need specialist care. Although there are relatively few of these children, they make up many of the deaths that occur in under fives. Often, many conditions that affect seriously ill children occur together. Children with persistent diarrhoea may suffer from malnutrition. Malnourished children may be more prone to respiratory and other infections such as meningitis and malaria. Treatments for these illnesses often overlap. We have produced a combined issue to provide health workers with some of the most up-to-date guidelines on treating these conditions.

We also give advice on care in emergency situations where fast action has to be taken to save the life of the child. Faced with an unconscious child, a convulsing child or a child in shock, it is easy to panic and forget some important aspects of treatment. We give simple guidelines that we hope will make it easier for health workers to deal with these situations.

The article on job aids gives advice on how health workers can make the best use of standard guidelines to improve their performance. Some of the charts and tables provided in this issue can be used as job aids. They can be pinned up in a busy clinical area in the hospital or health centre, to remind health workers of the correct drugs to use and their proper dosages.

An important theme of this double issue is: learn to identify the very sick child and give him or her priority treatment. The busier you are, the more important this message. Very sick children may need emergency care urgently to save their lives. Or they may have a condition such as severe malaria or meningitis where the chance of dying rises steeply with every hour of delay before treatment is started. All hospital staff including drivers, receptionists and cleaners, should be encouraged to identify these children and show them to medical staff quickly. They need to be seen as soon as possible and there should be no delay in treatment. These simple actions will save many lives, and families will greatly appreciate the urgency and concern being shown for the very sick child.

Finally, we must always remember that in developing countries, nurses and other senior health personnel are often in short supply. Often there is only one nurse on duty in a busy ward who will have many responsibilities. Therefore once the immediate emergency is over, families are expected to play an important role in the in-patient care of sick children. *CHD* recognises that parents, and especially mothers, are partners in treatment, even hospital treatment. Therefore in this, and other issues we try to keep the main points of treatment relatively simple so that health workers can instruct parents what to do and what to look out for when looking after very sick children.

Harry Campbell and William Cutting

Page 2	Letters Terms and definitions
Page 3-4	Fast action saves lives
Page 5	Dealing with diarrhoea
Page 6-7	Managing meningitis and severe malaria
Page 8-9	Treatment guidelines
Page 10-12	Malnourished children: 10 steps to recovery
Page 13	Managing pneumonia
Page 14	Preventing measles deaths
Page 15	Job aids provide key information
Page 16	Research update Quiz

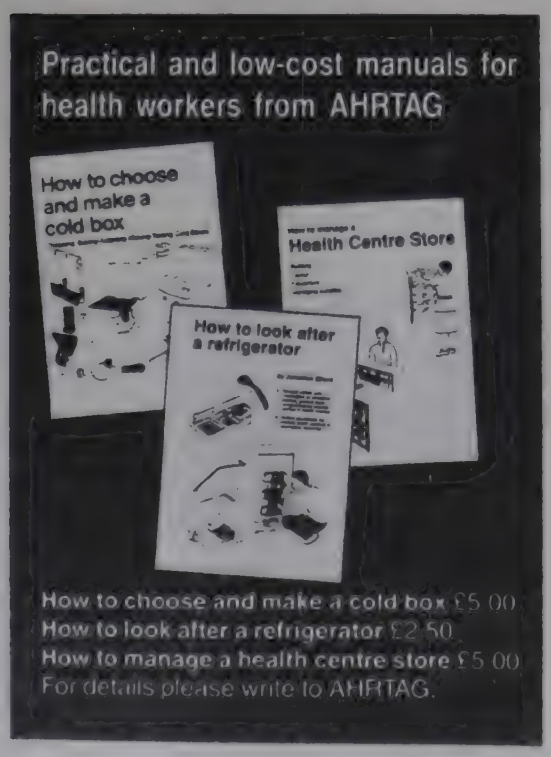
Prize draw

Thanks to all readers who returned the *Child Health Dialogue* readers' survey. A brief report of the results will appear in *CHD5*. All the questionnaires went into a prize draw. The winner is Helen Itangare from Musoma Regional Hospital, Tanzania. She received £50.

The value of play

The article by Ann Ashworth and Sultana Khanum in *CHD2* on managing malnutrition was very useful. Involving the child's mother in the management is of key importance. There are often opportunities for involving other family members too, such as grandmothers. One aspect of therapy not mentioned was that of mental stimulation. Apathy is a real killer, suppressing appetite and the will to live. A straightforward approach to this is with play. Time spent actively playing with a malnourished child often will be rewarded. The youngest baby lying on his or her back can look at a brightly coloured mobile hanging over the cot. A little imagination will produce other ways of playing. In a nutrition rehabilitation centre, a member of staff may be given the responsibility for developing play therapy. When the sparkle returns to a child's eyes and a smile to his or her face, you know the child will recover, provided the food supply is maintained.
Martin Schweiger, 12 Montagu Place, Leeds LS8 2RG, UK

Editor's note: An article on page 10 emphasises the importance of stimulation and play in helping malnourished children recover.


Practical and low-cost manuals for health workers from AHRTAG
How to choose and make a cold box
Health Centre Store
How to look after a refrigerator
How to choose and make a cold box £5.00
How to look after a refrigerator £2.50
How to manage a health centre store £5.00
For details please write to AHRTAG.

Treating anaemia

Dr Zafar Mirza's contribution in *Dialogue on Diarrhoea* 55 about drug misuse in Pakistan reminded me of a related story. Almost half the women of child-bearing age in Pakistan are anaemic. Maternal anaemia is associated with increased maternal and perinatal mortality, both of which are unacceptably high in Pakistan. The best treatment for anaemia – simple, safe, affordable iron supplements – is not available in some parts of the country. In each of the 15 pharmacies in the main medical area of Hyderabad, Sindh's second city, the only oral iron available is a modified-release, combination preparation. Iron absorption is limited by this formulation, so it is a poor way to give a supplement. These forms of iron also cost too much for people on a low income. Anaemia should be easily and cheaply treatable. I wonder whether readers can campaign to put pressure on local pharmacies and also international drug companies to ensure that the cheapest and most effective forms of drugs are available to the poorest patients?
Dr Jane Wilson, 33 Hartington Grove, Cambridge, CB1 4UA, UK (formerly of Sindh Rural Water Supply and Sanitation Project, Hyderabad, Pakistan)

Multivitamins and appetite

Children often lose appetite when they are sick. There seems to be a very strong belief among clinical staff that multivitamins improve the appetite. I would be grateful for your comment as I have not found this supported by information in texts.
Felicity Mayfield, Gwanda Provincial Hospital, PO Box 125, Gwanda, Zimbabwe

Adriano Cattaneo, Bureau for International Health, Trieste, Italy, replies: The proper use of vitamins is to prevent and treat deficiencies. For this, adequate specific vitamins must be given for each specific deficiency. Multivitamin preparations do not fulfil these requirements. They can be used to supplement diets which are poor or when the requirements are increased; but even in these cases, specific vitamin preparations are preferable. There is no proven effect of multivitamins on the appetite of healthy or sick children. The loss of appetite during illness is probably caused by chemical substances (cytokines) acting on the brain upon which vitamins have no effect.

&

Starting with this issue of *Child Health Dialogue*, we will include a regular box with some of the terms used in the issue.

Aspiration pneumonia – pneumonia resulting from foreign material, usually food or fluid getting into the lungs. This is particularly dangerous in unconscious patients.

Capillary refilling time – a way to assess circulation: quickly press the child's finger nail and count how long it takes for the colour (blood supply) to return. This should normally be less than two seconds.

Cyanosis – blueness of the lips or tongue, most often due to a lack of oxygen.

Gag reflex – the ability of a child to swallow and prevent material going down the windpipe. Tested by touching the soft palate and seeing if the throat muscles contract.

Haematocrit – a blood test measuring the proportion of red cells to plasma, often used as a measure of anaemia.

Haemoglobin – the substance inside red blood cells that carries oxygen. Haemoglobin levels are low in anaemia.

Hypoglycaemia – a low level of sugar (glucose) in the blood.

Lethargic – very sleepy, drowsy, lacking in interest or energy.

Sepsis – the presence of pus-forming bacteria in the blood or tissues, such as in septicaemia (blood poisoning).

Stridor – a high pitched noise on breathing in, due to a partly obstructed larynx or upper airway.

Temperatures listed in *Child Health Dialogue* are based on the axillary (under arm) temperature (an accurate reading takes three minutes). Core (rectal) temperatures are usually 0.5°C higher.

Xerophthalmia – changes in the eye caused by vitamin A deficiency

Quiz answers from page 1

T = true, F = false

1.T	7.F	13.T
2.T	8.F	14.F
3.T	9.F	15.T
4.F	10.F	16.T
5.F	11.T	17.F
6.F	12.T	18.T

Fast action saves lives

Giorgio Tamburlini provides an overview of the steps needed to provide emergency care for children in hospital.

Very sick children need to be treated quickly.

Children's lives can be saved if health workers are trained in emergency care procedures. There are three key aspects to providing appropriate emergency care for very sick children who reach hospital:

1. organise emergency care within hospital routines
2. identify and immediately care for children with life-threatening conditions
3. monitor, further assess and modify treatment where needed.

Organise emergency care

- Frequently check the queue of children waiting for admission to identify and give priority to those who are very sick.
- Set apart an area of the ward for emergency care and care of very sick children. A health professional should always be available to monitor these children
- Check regularly that essential equipment, oxygen and drugs are available and ready for use
- Adopt standard treatment guidelines for common childhood illnesses and check that staff follow them.
- Hang easy-to-read wall charts of key treatment guidelines in the emergency care area. (See page 15 about the usefulness of such guides.)
- Organise facilities for continuous 'round the clock' admission of emergency cases.

Identify and treat emergencies

Very sick children need to be treated quickly. There are a few easy-to-recognise signs which indicate that a child has a life-threatening condition. These signs can easily be memorised as ABCD:

- **A**irway
- **B**reathing
- **C**irculation
- neurological **D**anger signs

The checklist box shows how to assess each sign and the immediate action to take

If any of the signs are present, treatment should be started immediately by the most senior health worker available. Children requiring emergency care must also have their blood sugar levels checked (see box on page 4 for guidelines on Management of low blood sugar). In areas where malaria is endemic, check blood film for *Plasmodium falciparum* parasites.

Monitor and re-assess

Once immediate care has been provided, further assessment, classification and treatment should follow the guidelines for specific conditions (see other articles in this issue). Very sick children should be closely monitored until clinical conditions stabilise. Clinical monitoring can be based on the same signs (ABCD) used for the initial

Emergency care CHECKLIST

Airway and Breathing

- Is the child breathing?
  - Check for blockage in the mouth, throat or windpipe and put child in coma position
- Does the child have cyanosis?
  - give oxygen, keep the airway clear
- Is the child in respiratory distress?
  - give oxygen, keep the airway clear

Circulation

- Is the child bleeding?
  - stop any bleeding
- Is the child in shock? Are there signs of circulatory failure (rapid and weak pulse, low blood pressure, cold and blue hands and feet, capillary refilling time longer than 2 seconds)?
  - give IV fluids rapidly
- Is the child very pale? (check palms, lips, eyes)
  - check haemoglobin/haematocrit

neurological Danger signs

- Is the child unconscious?
  - put child in coma position
- Is the child having convulsions?
  - see box on page 4 for management

Key messages

- All children brought to hospital should be screened to see if they need emergency care.
- Four signs (ABCD) help identify life-threatening conditions which require emergency treatment
- Standard treatment guidelines help health workers deal with emergency conditions and other serious illnesses

assessment; additional signs such as respiratory rate, heart rate, peripheral pulses and coma scale (see box on care of the unconscious child) are also useful. A monitoring chart should be kept at the child's bed.

Giorgio Tamburlini, Department of Paediatrics and Bureau for International Health, Instituto per l'Infanzia 'Burlo Garofolo', Via dell'Istria 65/1, 34137 Trieste, Italy

Management of low blood sugar (hypoglycaemia)

Measure

Either take capillary blood from a finger prick and test with dextrostix (glucose test strip) or send a blood sample to the laboratory.

Check

A child has hypoglycaemia if the blood glucose level is less than 2.5mmol/l (45mg/dl) or 3mmol/l (54mg/dl) in severely malnourished children.

Treat

- if the child is unconscious:
  – give 1ml/kg body weight of 50% IV glucose solution diluted to a 10% solution. Infuse over 15 minutes. A 10% solution is made by diluting the required amount of glucose solution with four times that amount of IV fluid.

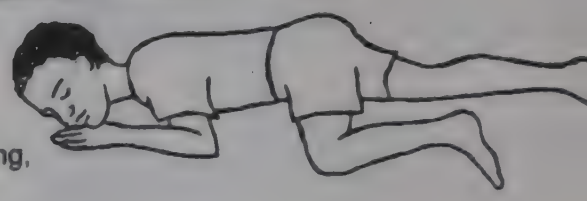
  EXAMPLE For a child of 10kg, take 10ml of 50% glucose solution. Add 40ml of sterile water or saline to make up to 50ml. Give intravenously over 15 minutes at a rate of 3-4ml per minute.

  – if you do not have IV glucose, give 50ml of sugar water via a nasogastric tube. Dissolve 1 rounded teaspoon of sugar in 3½ tablespoons water.
- If the child is alert and can swallow:
  – give 50ml sugar water by mouth.

- Recheck the blood sugar after 30 minutes and again after two hours. If the blood sugar is still low on either occasion repeat the glucose solution. As the child recovers, feed every two hours, day and night.

- If you cannot measure the blood sugar, suspect and treat for hypoglycaemia, any child who is unconscious or having convulsions.

Emergency care of convulsions



1. Turn the child on his or her side (coma or recovery position). If secretions interfere with breathing, clear them with suction. Do not try to keep the mouth open with a plastic airway or any other object.
2. If the child has cyanosis or if the convulsions last more than five minutes, give oxygen (see page 13).
3. Check for, and treat, hypoglycaemia (see box).
4. If convulsions last more than five minutes, start drug treatment.

There are several possible regimens using multiple doses of three drugs: diazepam, paraldehyde and phenobarbitone.
The usual sequence is:
diazepam (0.3mg/kg IV or 0.4mg/kg rectal) – wait 10 minutes;
if convulsions continue: repeat dose of diazepam – wait 10 minutes;
if convulsions continue: paraldehyde (0.2ml/kg IM or 0.4ml/kg rectal) followed by a repeat dose after 10 minutes if necessary.

- If **only** diazepam is available:

give diazepam (dosage as above) – wait 10 minutes;
if convulsions continue: repeat dose of diazepam – wait 10 minutes;
if convulsions continue and child is breathing well: repeat dose of diazepam **and watch closely for respiratory depression.**

- If diazepam is not available, two alternatives are:

i. paraldehyde (0.2ml/kg IM or 0.4ml/kg rectal) – wait 10 minutes;
if convulsions continue: repeat dose of paraldehyde – wait 10 minutes;
if convulsions continue: repeat dose of paraldehyde

ii. if only phenobarbitone is available: loading dose of phenobarbitone (15mg/kg IV or IM) – wait 30 minutes;
second dose of phenobarbitone (10mg/kg IV or IM)

Note: do not give further treatment for convulsions beyond these regimes.
Remember: repeated doses of diazepam or phenobarbitone lead to respiratory depression but prolonged convulsions also do harm.

Emergency care of the unconscious child

- Turn the child on his or her side (coma or recovery position) to reduce the risk of aspiration pneumonia. If a serious neck injury is suspected, move the head in line with the body (log roll) and then support it so that it stays in line.
- Clear the airway by:
  – gently lifting the child's jaw forward. The head may also be tipped backwards slightly providing there are no signs or history of neck injury.
  – use suction to remove secretions such as saliva or vomit. Where suction is not available, wipe out the mouth using a damp cloth.
- Give oxygen in case of cyanosis.
- Set up an intravenous infusion and give IV fluids if the child is in shock.
- Insert a nasogastric tube and aspirate (suck out) the stomach contents. Leave the tube in place on free drainage.
- Check blood sugar and treat hypoglycaemia, if present.
- Make a blood film for malaria parasites.
- Check the level of consciousness at regular intervals using a coma scale you are familiar with.

For example:
A = 0 Is the child **A**lert?
V = 1 Is the child responding to **V**oice?
P = 2 Is the child responding only to **P**ain?
U = 3 Is the child **U**nresponsive to stimulation?

Dealing with diarrhoea

Olivier Fontaine explains how to care for children with severe diarrhoea in hospital.

Children with severe dehydration, persistent diarrhoea with dehydration, or bloody diarrhoea which shows no sign of improving, need hospital treatment.

Severe dehydration

Children with severe dehydration should be given rapid intravenous fluids (IV) immediately (see guidelines on page 8). If the child can drink, give oral rehydration salts (ORS) solution while the drip is set up. Otherwise give ORS as soon as a child can drink without difficulty (within 3-4 hours for infants or 1-2 hours for older children). ORS corrects minerai deficiencies more effectively than IV fluids.

If the child is still dehydrated after three hours for older children, or six hours for infants, repeat the IV infusion. If the child is improving and can drink, stop the IV infusion and encourage the mother to give ORS and to breastfeed frequently. Observe the child for at least six hours before discharge from hospital, to ensure that the mother can maintain the child's fluid balance.

Persistent diarrhoea

Children with acute diarrhoea for more than 14 days are at high risk of malnutrition or death. They need hospital treatment if they:

- are moderately or severely malnourished
- have a serious infection
- have signs of dehydration
- are below four months of age.

Management includes fluid replacement, appropriate diet and treatment of associated infections.

ORS is effective for most children with persistent diarrhoea. In a few cases, glucose may be poorly absorbed and the diarrhoea will worsen. These children need initial rehydration with IV fluids.

Feeding is essential. Young infants should continue breastfeeding. Mothers who are not breastfeeding need encouragement to re-establish lactation. If this is not possible, give a low lactose food such as yoghurt.

Older infants and young children should be given food six times a day as soon as they can eat. Children often eat poorly until serious infections have been treated for 24-48 hours. They may require initial nasogastric feeding. Two types of diet can help children with persistent diarrhoea (see box on left).

Children who respond well to either diet should be given additional fresh fruit and well-cooked vegetables. Then they should be given an appropriate diet for their age, including milk. Children with persistent diarrhoea should also receive supplementary multivitamins and minerals each day for two weeks (see box on right).

Routine treatment of persistent diarrhoea with an antimicrobial is not effective or recommended. However, children with intestinal infections (shigellosis, amoebiasis or giardiasis) or non-intestinal infections (pneumonia, urinary tract infection or sepsis) need specific antibiotic therapy.

Bloody diarrhoea

Bloody diarrhoea (dysentery) – usually caused by the shigella bacteria – is a dangerous type of diarrhoea. Children should be hospitalised if they fail to improve after two days of treatment with an antibiotic and if they:

- are severely malnourished
- are less than one year old
- have recently had measles
- were initially dehydrated.

Give an antibiotic recommended for shigella in your area (see page 8). Drugs to reduce the frequency of stools should **never** be used to treat bloody diarrhoea as they can increase its severity.

During any severe diarrhoeal illness breastfeeding should be continued and the frequency increased. Older infants and children should have an extra meal each day for two weeks.

Dr Olivier Fontaine, Child Health and Development Division, WHO, 1211 Geneva 27, Switzerland

Key messages

- Treat severe dehydration with IV fluids, ORS and frequent breastfeeding.
- Treat persistent diarrhoea by replacing fluids and giving an appropriate diet. Treat associated infections with specific antibiotics.
- Treat bloody diarrhoea (dysentery) with a specific antibiotic and increased breastfeeding or food. **Never** use antidiarrhoeal drugs.

1. Low lactose diet

Use milk, yoghurt or curds as an animal protein source. Provide no more than 3.7g lactose/kg body weight/day.

About 70 per cent of children will improve on this diet. If the child is not improving after seven days or if diarrhoea or dehydration worsens, stop this diet and give diet 2.

Both diets contain at least 70 kcal/100g and provide at least 10 per cent of calories as protein.

EXAMPLE
Mix together:
40g cooked rice (5 heaped teaspoons) made from 15g raw rice
85ml whole fresh milk (2/5 tea cup)
3.5g oil (3/4 teaspoon)
3g sugar/glucose (2/3 flat teaspoon).

Make up to 200ml (a full tea cup) with water. Give 200ml/kg body weight per day, for seven days.

2. Low starch and no lactose diet

Use eggs, chicken or fish as an animal protein source.

EXAMPLE
Mix together:
8g cooked rice (1 heaped teaspoon) made from 3g raw rice
64g egg (2 small eggs) or 12g cooked mashed/ground chicken or fish flesh
4g oil (1 teaspoon)
3g sugar/glucose (2/3 flat teaspoon).

Make up to 200ml with water and cook if using raw eggs. Give 200ml/kg body weight per day for seven days.

Based on: The Treatment of Diarrhoea: A manual for physicians and senior health personnel. WHO/CDR/95.3

Vitamins and minerals

Give a multivitamin/mineral mixture that provides at least two recommended daily allowances (RDA) of folic acid, vitamin A, zinc, copper and magnesium. For a one year old child, two RDAs would be:
folic acid 100mcg
vitamin A 800mcgRE
(retinol equivalents)
zinc 20mg
copper 2mg
magnesium 160mg

Managing meningitis and severe malaria

Elizabeth Molyneux *looks at the management of two of the most important causes of fever in sick children – meningitis and malaria.*

Fever is common in sick children and may indicate the presence of serious illness. Children with fever should be fully undressed and examined thoroughly to find the cause of the fever. In areas where malaria is common, all hospitalised children should have a blood film checked for malaria parasites.

Children who have a fever due to meningitis or malaria require rapid attention.

Meningitis

The only reliable way to diagnose meningitis is by microscopic examination of cerebrospinal fluid (CSF) obtained by lumbar puncture. However, the sooner antibiotic treatment is started for meningitis, the better the chances of success. If clinical signs, such as a stiff neck, are obvious, do not delay treatment by waiting for the results of a lumbar puncture.

The choice of antibiotics will depend on local patterns of drug resistance and national drug policies. Common treatments are given in the table on page 8. In epidemic situations where large numbers of children need to be treated, oily chloramphenicol may be used if it is available. It has the advantage of being effective in a single dose. If it is possible to culture and do antibiotic sensitivity tests on the CSF, the results may modify the choice o antibiotics. Antibiotic treatment shou continue for 10 days in children and 14-21 days in young infants.

Things to look for in an ill chil

- Look for a source of infection.
  Is there an ear infection?
  a urinary tract infection?
  an abscess?
  a red swollen joint?
- Look for a rash.
  (This could indicate dengue haemorrhagic fever, meningo-coccal disease or measles.)
- Look for signs of meningitis.
  In babies, signs are non-specific but include: a high-pitched cry, irritability, a poor suck, tense fontanelle (soft spot on the head
- Look for convulsions.
  They mask many of the signs of meningitis (stiff neck, irritability).

Malaria

In areas where malaria is prevalent thick and thin blood films must be examined. A positive slide does not exclude the presence of another infection (such as meningitis).

Children with simple malaria can treated as out-patients. Children wi severe and complicated malaria (se box on page 7) should be consider medical emergencies.

Quinine is the drug of choice for treatment of severe and complicate malaria in most of the world. See t table on page 9 for guidelines on it use, together with follow-on therap sulphadoxine-pyrimethamine.

Complications

Convulsions and hypoglycaemia c complications of both meningitis a malaria. Other complications of meningitis (and sometimes malaria include aspiration pneumonia or a continued fever. Complications wi malaria can include anaemia, acid and kidney failure. If complication occur, an experienced doctor mus examine the child to assess what further investigations and treatme required.

Any convulsion lasting longer t five minutes must be controlled a quickly as possible with anticonv (see box on page 4).

J Vizcarra/WHO

Fever may indicate the presence of a serious illness.

Any sick child who is not feeding or has convulsions may have low blood sugar (hypoglycaemia). See the box on page 4.

Aspiration pneumonia is a serious complication in any unconscious child and is best avoided by good supportive care.

Fever usually recedes in three to five days. If it does not, an experienced doctor needs to examine the child. If the fever continues for 14 days or the child remains unconscious, and there is a source of tuberculosis (TB) in the family, consider the diagnosis of tuberculous meningitis.

A blood transfusion must be given if:

- haemoglobin levels are less than 5g/dl and the child is in heart failure – enlarged liver, fast pulse, rapid breathing, cyanosis, pulmonary oedema (crackles in the lungs)
- the child has a high number of malaria parasites in the blood. This will result in further destruction of red blood cells and the child will become increasingly anaemic.

Transfuse 15-20ml/kg of whole blood over four hours. Frusemide 1mg/kg IV may be given halfway through the transfusion to prevent cardiac failure. If the child has pulmonary oedema, nurse in a semi-upright position, give oxygen if it is available and give a single dose of frusemide 1mg/kg IV or IM. Keep a strict fluid balance record so as not to overload the circulation further.

Urine flow should be monitored. A child should pass at least 1ml of urine/kg/hr. Urine flow is encouraged by giving adequate fluids to correct dehydration. If fluid input is sufficient but urine is not passed, a diuretic (frusemide 1mg/kg IV or IM once only) should be given. If, despite these precautions, acute kidney failure occurs, urgent specialist care will be needed.

Severe and complicated malaria

Malaria accompanied by:

- severe anaemia (less than 5g/dl or less than 15% haematocrit)
- hypoglycaemia (blood glucose less than 2.5mmol/l or 3mmol/l in malnourished children)
- acidosis (deep rapid breathing)
- jaundice, haemoglobinuria (dark or blood coloured urine), kidney failure (inadequate or reduced urine output)
- cerebral malaria (altered consciousness).

Daily IV fluid requirements

AGE	100%	70%
2 up to 12 months	up to 80ml per kg	56ml per kg
1 up to 5 years	up to 60ml per kg	42ml per kg

EXAMPLE

For an infant of 9 months weighing 8kg, the normal daily fluid requirement would be 640ml (80ml x 8kg). If the infant is suffering from meningitis, this should be reduced to 448ml (640ml x .7).

Monitor progress

- Place the child in a bed where nurses can observe easily and frequently.
- Check the child's pulse, respiratory rate and rhythm, coma score and pupils hourly for the first six hours.
- Check IV drip rates hourly until the child is stable, then reassess fluid requirements.
- Assess hydration and urine output every two hours until stable.
- A doctor must review the child at least twice a day.
- If the child's condition deteriorates, a doctor should be called to examine the child.
- Use a monitoring sheet to record progress.
- Recheck blood sugar immediately if there is any deterioration of level of consciousness or any convulsion.

With malaria, also:

- Check for anaemia clinically and, where necessary, by measuring haematocrit levels until the situation is stable.

Supportive care

In meningitis, it is easy to overhydrate a child. This may worsen the brain swelling which is already present due to the infection. Intravenous fluids should be carefully monitored to ensure they are not given too quickly. Most doctors reduce the amount of IV fluid in the first two to three days of the illness to no more than 70 per cent of the usual recommended daily requirements (see box at the top of this page).

A sick child needs feeding after the first two days. If the child does not have a gag reflex, the best and safest way of feeding the child is with a nasogastric tube. Careful explanation should be given to the mother about this procedure.

An unconscious child should be nursed on his or her side to prevent aspiration of any stomach contents into the lungs. Aspiration can occur when the child lies on his or her back, even without obvious vomiting. Encourage the mother to turn the child every two to three hours from one side to the other and to try to change soiled or urine soaked linen.

If the child is conscious and has a fever above 38.5°C, give paracetamol (15mg/kg) orally, three to four times a day. This will make the child feel better and drink more as the temperature comes down. Tepid sponging is not effective in lowering temperatures and is no longer recommended for fever.

Elizabeth Molyneux, Associate Professor of Paediatrics, College of Medicine, University of Malawi, Private Bag 360, Chichiri, Blantyre 3, Malawi

Key messages

Meningitis

- Start antibiotic treatment of meningitis quickly.
- Select the appropriate antibiotic according to national guidelines and resistance patterns.

Severe malaria

- Check blood films for malaria parasites.
- Treat severe or complicated malaria with quinine.
- Beware of possible complications such as anaemia, convulsions, hypoglycaemia and kidney failure.

Treatment guidelines

Intravenous fluids (for a severely dehydrated child)

- Give 100 ml/kg Ringer's Lactate solution **OR** normal saline (0.9% NaCl) as follows:

AGE	*First give*		*Then give*
Infants	30 ml/kg over 1 hour	Repeat rapid dose once if pulse is still very weak or not detectable	70 ml/kg over 5 hours
Older children	30 ml/kg over 30 minutes		70 ml/kg over 2.5 hours

EXAMPLE
An infant weighing 8kg would need 240ml (8x30ml) in the first hour (4ml per minute) then 560ml (8x70ml) over the next 5 hours.

- Reassess the child every 15-30 minutes until a strong radial pulse is felt.
  Then reassess every 1-2 hours to confirm that hydration is improving.
  If hydration is not improving, give IV fluids more quickly.

Note: Avoid giving rapid IV fluids to severely malnourished children, except if a child is in shock (has cold hands and feet, a rapid weak pulse, and is lethargic). Fluids must be monitored carefully.

Antibiotic treatment of bloody diarrhoea (shigellosis or dysentery)

DRUG	trimethoprim-sulphamethoxazole (TMP-SMX or cotrimoxazole)	OR nalidixic acid	OR ampicillin
DOSAGE	TMP 5mg/kg and SMX 25mg/kg	15mg/kg	25mg/kg
FREQUENCY	twice a day for 5 days	4 times a day for 5 days	4 times a day for 5 days

Adapted from: The Treatment of Diarrhoea: A manual for physicians and other senior health workers, WHO/CDR/95.3

Note: Selection of an antibiotic should be based on sensitivity patterns of shigella recently identified in the area and on national guidelines.
In many countries, nalidixic acid is now the preferred choice.

Antibiotic treatment of meningitis

AGE	*First 3 days give*		*Then continue gentamicin IV or IM and give*
Neonates	**ampicillin** 75mg/kg/dose 12 hourly IV or IM	**PLUS gentamicin** 3mg/kg/dose 12 hourly IV or IM	**oral ampicillin** 2.5ml syrup (250mg/5ml) four times daily (75mg/kg/dose)
	OR		
	benzylpenicillin 50mg/kg/dose 12 hourly IV or IM	**PLUS gentamicin** (dose as above)	
7 to 28 days old	**ampicillin** 75mg/kg/dose 8 hourly IV or IM	**PLUS gentamicin** 3mg/kg/dose 8 hourly IV or IM	**oral ampicillin** (as above)
	OR		
	benzylpenicillin 50mg/kg/dose 8 hourly IV or IM	**PLUS gentamicin** (dose as above)	
Infants and children	**ampicillin** 50mg/kg/dose 6 hourly IV or IM	**PLUS chloramphenicol** 25mg/kg/dose 6 hourly IV or IM	*Then continue IV or IM antibiotics until the child is able to take and absorb* **oral chloramphenicol** 25mg/kg/dose four times daily syrup contains 125mg/5ml (for infants aged 1 month up to 2 months, give 25mg/kg every 12 hours)
	OR		
	benzylpenicillin 50mg/kg/dose 6 hourly IV or IM	**PLUS chloramphenicol** (dose as above)	

Never exceed 1g dose of chloramphenicol

Note: Give antibiotics for a longer period in meningitis:

AGE	PERIOD
under 2 months	14-21 days
2 months up to 5 years	10 days

In epidemic situations, for rapid treatment of large numbers of children, oily chloramphenicol can be used:
Give as a single IM dose (it can be divided into two injection sites):

AGE	DOSAGE
2 up to 12 months	50-100mg/kg
1 up to 3 years	1g total dose
3 up to 6 years	1.5g total dose

Treatment of severe and complicated malaria

Intramuscular quinine Remember always dilute IM quinine

First give		*Then give*
10mg/kg IM	Repeat after four hours	Repeat dose every 12 hours until the child can swallow oral medication.

Quinine dihydrochloride injection is usually in ampoules containing 600mg/2ml and should be diluted to 60mg/ml with 8ml of 0.9% sodium chloride injection.

Intravenous quinine IV quinine must be given slowly, never give an IV dose in less than 4 hours.

First give		*Then give*
20mg/kg IV initial (loading) dose SLOWLY over a 4-hour period, diluted in 5-10ml/kg of a suitable IV fluid (preferably 5% glucose to counteract hypoglycaemia or 0.9% sodium chloride).	After 12 hours from the start of the loading dose, give 10mg/kg, again over a 4-hour period.	Repeat dose every 12 hours for at least 3 days but not more than a week.

IV/IM 10mg/kg, 2ml ampoule containing 600mg

AGE or WEIGHT	undiluted (for IV use)	diluted (IM)
2 up to 4 months (4-6kg)	0.2ml	1ml
4 up to 12 months (6-10kg)	0.3ml	1.5ml
1 up to 2 years (10-12kg)	0.4ml	2ml
2 up to 3 years (12-14kg)	0.5ml	2.25ml
3 up to 5 years (14-19kg)	0.6ml	2.5ml

Never exceed these doses.

After 3 days, when the child can take oral medication, give a single dose of sulphadoxine-pyrimethamine (SP) 125mg/kg
OR
oral quinine
10mg/kg
3 times a day for 7 days

Guide to SP doses

1 tablet = 500 mg sulphadoxine, 25mg pyrimethamine

AGE	DOSAGE
under 4 years	1/2 tablet
4 up to 9 years	1 tablet
9 up to 14 years	2 tablets
over 14 years	3 tablets

Note: If there is local resistance to SP, give an alternative treatment (such as mefloquine, 15mg/kg) as directed by the national policy guidelines. The management of malaria depends on national policy which determines the availability, at least in the public sector, of second line drugs.

Treatment of severe and very severe pneumonia (for children over 2 months)

SEVERE PNEUMONIA

benzylpenicillin (IM) **OR** ampicillin (IM) for 3 days,
then
oral amoxycillin **OR** oral ampicillin **OR** procaine penicillin injection
for at least 5 days in all cases.

- If there is no improvement within 48 hours, and/or if staphylococcal pneumonia is suspected, give: gentamicin (IM/IV) **PLUS** cloxacillin (IM/IV) **OR** chloramphenicol (IM/IV).
  Total duration of therapy should be at least 3 weeks.

VERY SEVERE PNEUMONIA

chloramphenicol **OR**
benzylpenicillin **PLUS** gentamicin
then
oral chloramphenical for a total course of at least 10 days.

- If staphylococcal pneumonia is suspected, give: gentamicin **PLUS** cloxacillin.
- If there is no improvement after one week (or if the child's condition deteriorates), investigate for tuberculosis.

ANTIBIOTIC	benzylpenicillin	ampicillin	gentamicin	gentamicin	cloxacillin	chloramphenicol
FORM	IM vial of 600mg (1,000,000 units) mixed with 2ml sterile water	IM vial of 500mg mixed with 2.5ml sterile water	IM or IV Paediatric vial of 2ml at 10mg/ml undiluted	IM or IV Adult vial* of 2ml at 40mg/ml undiluted	IM or IV vial of 250mg mixed with 1ml sterile water	IM or IV vial of 1g mixed with 4ml sterile water
	50,000 units/kg	50mg/kg	2.5mg/kg		25-50mg/kg	20-25mg/kg
FREQUENCY OF DOSAGE	every 6 hours for 3 days	every 6 hours	every 8 hours		every 6 hours	every 6 hours **Never exceed 1g dose**
AGE						
up to 12 months	1ml	2ml	2ml	0.5ml	0.5ml	1ml
12 up to 24 months	1ml	3ml	3ml	0.75ml	1ml	1.5ml
2 up to 5 years	2ml	4-5ml	–	1ml	1ml	2ml

Note: *The adult vial of gentamicin can be diluted with 6ml of sterile water. The dosage will then be the same as the paediatric vial: 8-9kg 2ml; 10-14 kg 3ml.

ORAL DOSAGES	amoxycillin	ampicillin	procaine penicillin
	1 tablet (250mg) or 10ml syrup (125mg/5ml) 3 times a day for 5 days (½ tablet or 5ml of syrup for infants under 1 year)	1 tablet (250mg) or 5ml syrup (250mg/5ml) 4 times a day for 5 days	IM vials of 3g (3,000,000 units) mixed with 4ml sterile water – 1-1.5ml once a day for 5 days (0.75ml for infants under 1 year)

Ten steps to recovery

Ann Ashworth, Alan Jackson, Sultana Khanum and Claire Schofield *report on ten steps to manage severely malnourished children.*

Many severely malnourished children are sent for in-patient care only after they have become seriously ill. This makes treatment difficult. With incorrect care many children die or recover slowly. However, the following practical guidelines offer malnourished children their best chance of a full recovery.

Severely malnourished children have *severe wasting* and/or *oedema* (swollen limbs). Such children are usually very ill and often have complications. Malnutrition affects the functioning of the organs of the body so special care during treatment is needed.

There are 10 essential steps in the care of severely malnourished children:

Murray-Lee/UNICEF

PHASE	STABILISATION Day 1-2	Day 2-7+	REHABILITATION Week 2-6
1. Hypoglycaemia	-------->		
2. Hypothermia	-------->		
3. Dehydration	-------->		
4. Electrolytes	---------->		
5. Infection	---------->		
6. Micronutrients	---------- no iron ----------		with iron ---------->
7. Cautious feeding	---------->		
8. Rebuild tissues		---------->	
9. Sensory stimulation	---------->		
10. Prepare for follow-up		---------->	

1. Treat/prevent hypoglycaemia (lo blood sugar)
2. Treat/prevent hypothermia (low b temperature)
3. Treat/prevent dehydration (loss o body fluids)
4. Correct imbalance of electrolytes (salts in blood and cells)
5. Treat infections
6. Correct deficiencies of micro-nutrients (vitamins and minerals)
7. Start cautious feeding, then
8. Rebuild wasted tissues (catch-up growth)
9. Provide stimulation, play, and lov care
10. Prepare for follow-up after hosp discharge.

These steps cover two phases: a **stabilisation phase** where the acut medical conditions are managed an longer **rehabilitation phase**. The treatment procedures are the same marasmus (the type of malnutrition severe wasting) and kwashiorkor (t type with oedema). The approximat time-scale is given in the table.

STEPS 1 Treat/prevent hypoglycaemia and hypothermia

Hypoglycaemia and hypothermia usually occur together and are associated with infection. Frequent feeding is important in treating and preventing both conditions (see ste

Test for **hypoglycaemia** (blood s below 3mmol/l) with a glucose test (dextrostix). If confirmed, give by m or nasogastric tube:

- 50ml of 10% glucose solution or sugar water (1 rounded teaspoo sugar in 3½ tablespoons water)

then

- feed every two hours, day and n Start straightaway (or rehydrate if needed).

Check the blood sugar again after minutes and again after two hours is low on either occasion, repeat th 50ml glucose solution or sugar wa

If you are not able to test, assur severely malnourished children ha hypoglycaemia and treat accordin

Hypothermia is present if the und arm temperature is below 35°C or rectal temperature is below 35.5°C Testing requires a thermometer th measures low temperatures. If the has hypothermia:

- feed straightaway (or start rehydration, if needed)
- put the child on the mother's ba

chest or abdomen (skin-to-skin contact) and cover them. If the mother is absent, clothe the child, including head, and cover with a warmed blanket. Place a heater or lamp nearby. Do not use hot water bottles.

Check:

- the rectal temperature every two hours until it rises above 36.5°C (take every half hour if a heater is used)
- the child is covered at all times, especially at night
- for hypoglycaemia whenever hypothermia is found.

If the thermometer does not measure low temperatures and the child's temperature is too low to register, then assume the child has hypothermia.

To prevent hypoglycaemia and hypothermia:

- feed the child every two hours, start straightaway
- always give feeds during the night
- keep the child covered and away from draughts
- avoid exposure (such as bathing, prolonged medical examinations).

Treat/prevent dehydration

Do not use the standard WHO oral rehydration salts solution. It contains too much sodium and too little potassium for severely malnourished children. Give a modified solution instead (see Box 1). Do **not** use the IV route except in shock, and then do so with care to avoid flooding the circulation and overloading the heart.

To treat dehydration, give:

- 5ml/kg of the modified solution every 30 minutes for two hours, by mouth or nasogastric tube; then
- 6-10ml/kg every hour for the next 4-10 hours.

The exact amount to give should be determined by how much the child wants, number and volume of diarrhoeal stools, and whether the child is vomiting.

- Start feeding as soon as the signs of dehydration have been corrected.

1. Modified ORS solution

Ingredient	Amount
water	2 litres
WHO-ORS	one 1 litre packet
sugar	50g
electrolyte/ mineral solution	40ml (see Box 2)

2. Combined electrolyte/ mineral solution

(for rehydration solution and feeds)

Ingredient	Amount (g)
potassium chloride	224
tripotassium citrate	81
magnesium chloride	76
zinc acetate	8.2
copper sulphate	1.4
water: make up to	2500ml

Monitor the progress of rehydration every 30 minutes for the first two hours, then every hour for the next 6-12 hours. This involves checking pulse and respiratory rates and how often urine, stool and vomit are passed.

The child's rapid breathing and rapid pulse rate (which are signs of dehydration) should slow and the child should begin to pass urine. Respiratory and pulse rates that stay rapid may be due to infection, heart failure or overhydration. Signs of too much rehydration fluid are increasing respiratory and pulse rates and increasing oedema and puffy eyelids. If these signs occur, stop fluids immediately and reassess the child's condition after one hour.

To prevent dehydration when a child has watery diarrhoea:

- start feeding straightaway
- replace the approximate volume of stool losses with the modified rehydration solution
- encourage continued breastfeeding if the child is breastfed.

Correct electrolyte imbalance

All severely malnourished children have too much sodium in their bodies. They also have potassium and magnesium deficiencies which may take at least two weeks to correct. Oedema is partly due to these deficiencies. (Malnutrition oedema should never be treated with a diuretic.)

Give:

- extra potassium 2-4mmol/kg/day
- extra magnesium 0.3-0.6mmol/kg/ day
- modified ORS solution (see step 3)
- prepare food without salt.

The extra potassium and magnesium can be prepared in liquid form (see Box 2) and added directly to feeds during preparation (see Box 5).

Treat infection

In severe malnutrition the usual signs of infection, such as fever, are often absent. Therefore **give routinely** to **ALL** admissions:

- broad-spectrum antibiotic(s) (see Box 3)
- measles vaccine to unimmunised children.

Harmful bacteria may also start to grow in the upper gut so we (the authors) routinely also give metronidazole (7.5mg/kg three times a day for seven days) to all children admitted with severe malnutrition (see Editor's note).

Where **specific infections** are identified (such as Shigella), **ADD** specific appropriate antibiotics.

For parasitic worms, give mebendazole 100mg orally twice a day for three days.

Correct micronutrient deficiencies

All severely malnourished children have vitamin and mineral deficiencies.

3. Choice of antibiotics

- For a child with no complications give:
  cotrimoxazole
  5ml paediatric suspension orally, twice daily for 5 days
  (2.5ml if weight is less than 4kg)
- For a child who is severely ill, for example, who is lethargic or has complications such as hypoglycaemia, hypothermia, infections or skin lesions, give instead:
  gentamicin
  3.5mg/kg IM/IV
  every 12 hours for 7 days
  plus
  ampicillin
  50mg/kg IM/IV
  every 6 hours for 2 days,
  then orally for 5 days.
- If the child fails to improve within 48 hours, **add**:
  chloramphenicol 25 mg/kg IM
  every 6 hours for 5 days
- If poor appetite continues after 5-7 days of antibiotic treatment, complete a 10-day course.
  If poor appetite persists, the child should be fully reassessed.

Box 4 indicates how these can be corrected. Although anaemia is common, giving iron can make infections worse. Do **NOT** give iron until the child has a good appetite and starts gaining weight (usually during the second week of treatment).

Start cautious feeding

In the **stabilisation phase** (days 1-7+), the amount and type of food given is important. Feeds should be started as soon as possible and provide just sufficient energy and protein to maintain basic physiological processes. Box 5 shows starter formula recipes.

Give:

- small, frequent feeds of a milk-based starter formula
- 100kcal/kg/day
- 1-1.5g protein/kg/day
- 130ml/kg/day (100ml/kg/day if the child has much oedema).
- If the child is breastfed, encourage continued breastfeeding (give starter formula first).

Very weak children may be fed by spoon, dropper, syringe (remove needle) or nasogastric tube. During this phase, diarrhoea should gradually diminish and children with oedema should lose weight. A typical schedule for feeding is:

Days	Frequency	Vol/kg/feed	Vol/kg/day
1-2	2 hourly	11ml	130ml
3-5	3 hourly	16ml	130ml
6-7+	4 hourly	22ml	130ml

Rebuild wasted tissues (catch-up growth)

In the **rehabilitation phase** very high intakes of energy and nutrients are needed to promote rapid growth. **Readiness to enter** this phase is recognised by the return of appetite, usually after one week.

Make a gradual transition from starter to catch-up formula as follows:

- For 2 days replace starter formula with an equal amount of catch-up formula .
- Then increase each feed by10ml until some feed remains uneaten. A child should have about 200ml/kg/day of the catch-up formula.

The aim is to give:

- frequent feeds (every 4 hours) of a catch-up diet (unlimited amounts)
- 150-220kcal/kg/day
- 4-6g protein/kg/day.

4. Micronutrient deficiencies

Give:

- multivitamin supplement
- folic acid 1mg/day (give 5mg on day 1)
- zinc 2mg/kg/day
- copper 0.2mg/kg/day

(see Box 2 for mineral recipe)

Do not give iron until the child starts gaining weight even if the child is anaemic. Then give 3mg/kg/day. If vitamin A has not been given in the last month, give a single dose.

AGE	DOSAGE
under 6 months	1 capsule
6 up to 12 months	2 capsules
1 up to 5 years	4 capsules

1 capsule = 50,000IU Vitamin A

Also, encourage continued breastfeeding if the child is breastfed. Box 5 gives recipes for milk-based catch-up formulas. Modified porridge or family foods can be used if they have similar energy and protein concentrations.

Stimulation, play and loving care

Severe malnutrition delays a child's mental and behavioral development. Starting from admission, provide:

- tender, loving care
- structured play and physical activity as soon as the child is well enough
- a cheerful, stimulating environment.
- Encourage mother's involvement when possible (such as comforting, feeding, bathing, play).

Preparation for follow-up after discharge

It is important to involve parents in feeding and playing with their child as soon as possible so that they gain experience and confidence in what to do after the child goes home.

A child who is 90% weight-for-length can be considered to be ready for discharge. The child is still likely to have a low weight-for-age because of stunting (short stature). Good feeding practices and stimulation should continue at home. The family should:

- give energy- and nutrient-dense foods at least five times a day
- play with the child in ways that improve mental development.

Health workers should advise parents about the need for vitamin A every six months and for booster immunisations. Health workers can help to prevent malnutrition by promoting good breastfeeding, weaning and appropria feeding practices and by working with communities to prevent diarrhoea and infectious diseases.

Dr Ann Ashworth and Ms Claire Schofield, Centre for Human Nutritio London School of Hygiene and Tropical Medicine, London WC1E 7H UK; Professor Alan Jackson, Department of Human Nutrition, University of Southampton, Southampton SO9 3TU, UK; Dr Sultana Khanum, Save the Children Nutrition Unit, Dhaka, Bangladesh

Claire Schofield is funded by the Canadian International Development Agency (CIDA) whom thanks are due.

Editor's note: WHO advises that the efficacy of using metronidazole, mentioned in step 5, has not been established by clinical trials. WHO recommends that mebendazole, also mentioned in step 5, should be given o to children over two years.

5. Recipes for milk-based formulas

Ingredient	starter (step 7) Amount	catch-up (step 8) Amount
whole dried milk*	35g	110
sugar	100g	50
vegetable oil	20g	30
electrolyte/ mineral solution	20ml	20m

For all formulas, make up to 1,000ml with water.

*The recipe can be modified for oth types of milk:

For dried skimmed milk use:

	starter	catch-u
milk	25g	80
sugar	100g	50
oil	30g	60
electrolyte/ mineral solution	20ml	20

For fresh cow's milk use:

	starter	catch-u
milk	300ml	880
sugar	100g	7
oil	20ml	20
electrolyte/ mineral solution	20ml	20

Starter formulas contain 75kcal and 0.9g protein/100ml. Catch-up formulas contain 100kcal and 2.9g protein/100ml.

Managing pneumonia

__Lulu Muhe__ discusses the management of severe and very severe pneumonia in hospital.

All children with cough or difficult breathing should be assessed for pneumonia. Any child with severe or very severe pneumonia should be admitted to hospital for treatment.

At hospital level a distinction is usually made between severe and very severe pneumonia among children aged two months up to five years:

- A child who has cyanosis and is unable to drink is classified as having **very severe pneumonia**. If these children have convulsions or are difficult to wake, consider a lumbar puncture to check for meningitis.
- A child who has chest indrawing but is still able to drink and has no cyanosis, is classified as having **severe pneumonia**.

Treatment

The hospital should have a constant supply of essential antibiotics and oxygen. The antibiotics are benzylpenicillin, cloxacillin, chloramphenicol and gentamicin. See table on page 9 for treatment details.

Oxygen can come from an oxygen cylinder or an oxygen concentrator. Where the oxygen supply is limited, give priority to children with very severe pneumonia. Where there is an ample supply of oxygen, also give oxygen treatment to children with:

- respiratory rate above 70 per minute OR
- severe chest indrawing OR
- respiratory distress, restlessness (if oxygen improves the condition).

In addition to these life-saving measures, high fever (>39°C) should be treated with paracetamol; the airway should be kept clear; and the child should be encouraged to drink and/or breastfeed, taking care not to choke the child.

Young infants

Young infants under two months of age with severe or very severe pneumonia can have a variety of non-specific signs. Suspect severe pneumonia in those with signs such as not feeding well, convulsions, abnormally sleepy, fever (38°C or more), fast breathing (60 breaths per minute or more), cyanosis, grunting or apnoeic attacks. It is often difficult to distinguish severe pneumonia from meningitis or sepsis in this age group. The treatment for all of these conditions is benzylpenicillin plus gentamicin for at least 14 days. Oxygen therapy should be given as for older children.

Lulu Muhe, Associate Professor in Paediatrics, Addis Ababa University, PO Box 1768, Addis Ababa, Ethiopia

Editor's note: Other forms of severe ARI – severe wheeze or severe stridor – also require hospitalisation. Details about their management are in ARI News 27. Please write if you would like a copy.

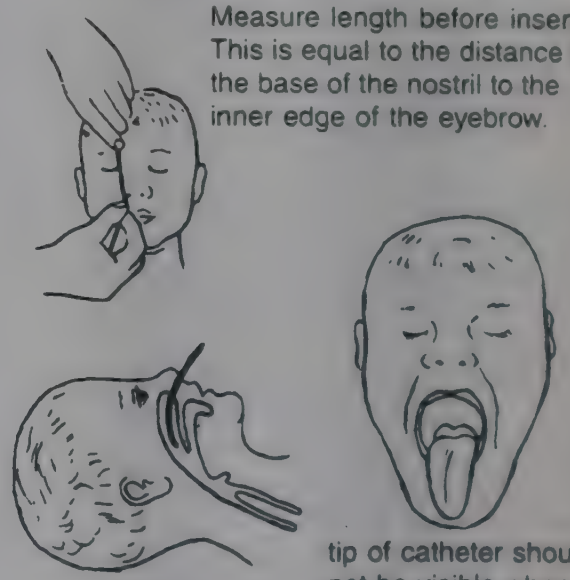
Methods to provide oxygen

Two methods are recommended for providing oxygen. In both cases, oxygen is given at a flow rate of 1-2 litre/minute.

- **nasal prongs**
  – small plastic tubes which fit into each nostril

- **nasal catheter**
  – a plastic tube is inserted into the nostril until the tip lies inside the back of the nose.

Measure length before insertion. This is equal to the distance from the base of the nostril to the inner edge of the eyebrow.



tip of catheter should not be visible when the child's mouth is open

Note: *ARI News* 29 discusses oxygen therapy in more detail. Please write if you want a copy.

Pneumonia management

For the child aged 2 months up to 5 years with cough or difficult breathing:

VERY SEVERE PNEUMONIA

Clinical signs
central cyanosis
unable to drink
(chest indrawing may be present)
Summary of treatment
ADMIT
Give oxygen
Give an antibiotic (chloramphenicol)
Treat fever if present
Treat wheezing if present
Give supportive care
Reassess twice daily

- If there is poor response to treatment, check for common complications such as empyema, heart failure or bronchospasm.
- If staphylococcal pneumonia is suspected switch to cloxacillin plus gentamicin.

SEVERE PNEUMONIA

Clinical signs
chest indrawing
able to drink
no central cyanosis
Summary of treatment
ADMIT
Give oxygen
Give an antibiotic (benzylpenicillin)
Treat fever if present
Treat wheezing if present
Give supportive care
Reassess daily

- If there is a poor response to treatment in 48 hours or the child's condition deteriorates, switch to chloramphenicol

Preventing measles deaths

***Greg Hussey** outlines the treatment of measles in the context of integrated management of the sick child.*

In developing countries over one million children die from measles each year. Deaths from measles are more common in malnourished children and children with complications. Children should be treated in hospital if they have:

- a general danger sign (lethargy or unconsciousness, convulsions, unable to eat or drink, vomiting)
- signs of xerophthalmia
- deep or extensive mouth ulcers
- severe pneumonia
- severe stridor
- severe dehydration
- severe malnutrition.

Management

Deaths can be prevented if children with severe measles receive prompt and effective in-patient care and treatment.

There is no specific drug therapy for measles virus infection. Management is mostly supportive and directed to the treatment of complications. (See box on right for the basic principles of management).

Vitamin A therapy during measles significantly reduces the risk of complications and death. Vitamin A supplements are usually available as capsules containing oil. They need to be opened for children under the age of two years. See box below for dosage.

Children with measles should receive antibiotics if they:

1. have a specific bacterial infection such as pneumonia, otitis media or dysentery
2. have conditions such as severe malnutrition, HIV/AIDS and xerophthalmia which are associated with an increased risk of severe bacterial infections.

Treatment of specific complications

Children may have been malnourished before catching measles. Their nutritional status may worsen during measles because of poor appetite, sore mouth, diarrhoea and vomiting. Children with severe measles must receive food. If they cannot eat, pass a nasogastric tube and give liquid feeds and fluids. (See the feeding suggestions on pages 10-12.)

Children with measles often have red watery eyes due to inflammation of the conjunctiva. Pus at the corners of the eye indicates a secondary bacterial infection. Clean both eyes using a clean cloth and water three times a day. Apply tetracycline eye ointment three times a day for seven days. Do not use steroid ointments. If there are signs of xerophthalmia, the child should receive the treatment dose of vitamin A and a third dose four weeks later.

Measles can also cause a sore mouth and mouth ulcers (often due to secondary herpes viral infections). A sore mouth makes a child reluctant to feed and drink. Clean the child's mouth with clean water (add a pinch of salt, if available) at least four times a day and apply 1% gentian violet to the sores in the mouth after cleaning. A foul smelling discharge from the mouth may indicate an anaerobic infection. Treat this with metronidazole.

Complications such as convulsions, reduced level of consciousness or coma will require further assessment prior to treatment. Treat children with measles and severe pneumonia according to the guidelines on page 9. Children with acute otitis media should be given paracetamol for pain and fever, and an antibiotic (cotrimoxazole or ampicillin) for the infection. If there is discharge from the ear, clean the ears at least twice a day with cotton wool or a clean piece of cloth. (*ARI News* 25 describes management of otitis media. Please write if you would like a copy.)

Encourage mothers of children with diarrhoea to continue breastfeeding. Give the child more fluids than usual to prevent dehydration. If the child is dehydrated or develops persistent diarrhoea or dysentery, then treat according to the recommended guidelines (see page 5).

Monitoring in hospital

Hospitalised children must be monitored to detect any additional complications. Observe the child closely for any danger signs. Record the child's temperature, pulse and respiratory rate at least twice a day. Children should be weighed daily to monitor nutritional status. In the hospital setting, isolation of children with measles is recommended until fo days after the onset of the rash. Children in contact with the sick child should receive a dose of measles vaccine unless they can prove they have previously been vaccinated or have had measles.

Prevention

The goal of integrated case management is to reduce the high case fatalit rate. However measles is a disease that is preventable by immunisation. Obtaining and maintaining a measles vaccine coverage of at least 90 per cent is the basis of measles control.

Greg Hussey, Professor of Paediatri and Child Health, University of Cape Town, 46 Sawkins Road, Rondebosc 7700, Cape Town, South Africa

Vitamin A for measles

- Give first dose on admission and a second dose the following day.
- Children with xeropthalmia (eye changes) require a third dose four weeks later.

1 capsule = 50,000IU Vitamin A

AGE	DOSAGE
under 6 months	1 capsule
6 up to 12 months	2 capsules
1 up to 5 years	4 capsules (or 1 capsule of 200,000IU)

Basic principles of managemen

- Treat the whole child.
- Look for complications in high ris groups.
- Control fever.
- Give vitamin A.
- Encourage breastfeeding.
- Provide extra food.
- Act fast to treat eye lesions.
- Use antibiotics only when there are clear indications.
- Give ORS solution for diarrhoea.
- Give mouth care.
- Treat multiple complications – such as pneumonia, dehydration and stridor – at the same time.

Job aids provide key information

***Patricia Whitesell** explains how simple guides – job aids – can help health workers perform important tasks better.*

With any task, we all need to know *what* to do, *when* to do it, and *how* to do it well. For health workers such information may mean the difference between a child living or dying.

Health workers need special skills and knowledge to care for sick children. Without job aids, skills and knowledge must be committed to memory and then recalled when needed. Learning everything thoroughly enough to recall it any time requires considerable time and practice. After training, a health worker is likely to forget knowledge and skills which are not used frequently.

A job aid provides information when it is needed *in the work situation* to guide health workers. Thus, health workers do not have to commit everything to memory. Also, they feel more confident knowing that the job aid can act as a reminder.

A job aid may be a chart, checklist, worksheet, decision table, flowchart, step-by-step directions or a combination of these. A good job aid must be appropriate for the job, with instructions and terms that are clear and easy to follow.

Directions on a medicine bottle, a manufacturer's instructions for making up a toy or using a tool, and recipe books are familiar examples of job aids. Many health workers are familiar with job aids produced by WHO on care of sick children. The Diarrhoea Treatment Chart and the new charts for integrated case management of childhood illness are job aids.

Job aids are especially useful when tasks are complex or detailed or when a large number of tasks must be done. A job aid is important when there are serious consequences for errors. For example, the crew of an airliner use a job aid to make sure that they carry out all the necessary steps for takeoff and landing. These tasks are too important to trust to memory. Job aids are also useful reminders when tasks are done infrequently. When a job aid is used, a health worker will not leave out important steps, and will make decisions correctly.

If a health worker must do a task frequently or very quickly, it is not always practical to depend on job aids. In such cases it is better to memorise all the necessary skills and knowledge. Sometimes there are constraints that would limit the use of job aids. For example, some health workers worry that mothers will lose confidence in them if they seem to be looking up the questions to ask, or the doses of drugs to prescribe.

How to use job aids

Usually health workers will require training in how to do tasks even when given a job aid. They must understand the terms used in the job aid, and know how to use the job aid. They must develop the practical skills needed. They will also need to learn enough about the tasks to decide whether situations are like or unlike those described on the job aid.

The job aid should suit the work environment and be placed where health workers can use it while they work. Job aids for using or fixing machinery or equipment can be attached to the machine or displayed where the equipment is used. Job aids for assessing and classifying a sick child should be displayed in the view of health workers or in a small booklet that can be carried by each health worker. A job aid for dispensing drugs should be in view of health workers when and where that task is done.

If you are given a job aid, study it carefully before using it. Get guidance or training to be sure you understand all the terms and know how to do the tasks described. Be sure you know how to use the job aid itself, such as how to follow the sequence of steps, and how to find specific information when you need it.

Place the job aid conveniently where you will do the work. Protect it so that it will not be moved, lost or destroyed. For example, pin a chart to the wall and tape reference cards to the desk top, the refrigerator door, or a dispensing tray.

Patricia H Whitesell, ACT International, 57 Executive Park South, Suite 380, Atlanta, GA 30329, USA

Editor's challenge: Make an illustrated job aid for a task which you do. We'll give prizes for the best three entries and publish them in a future issue.

Coral Jepson/AHRTAG

Health workers use a WHO job aid to manage childhood illness.

The following summary and comment of a recent research paper on child health was prepared in collaboration with the editorial office of *The Kangaroo: Bibliographic archives for maternal and child health*. This journal is published twice a year with summaries and comments on key research papers published in international journals. For more information about *The Kangaroo* write to: Bureau for International Health, Istituto per l'Infanzia, Via dell'Istria 65/1, 34137, Trieste, Italy (fax: +39 40 3785 402). Readers from developing countries can subscribe to *The Kangaroo* at reduced rates and there are also possibilities for free subscriptions for those committed to actively distribute copies in their region. For a copy of the full research study, contact AHRTAG.

- **Hypoglycaemia in paediatric admissions in Mozambique.** Solomon T, Felix J M, Samuel M, et al. Lancet 343: 149-150, 1994.

Reviewed by Anthony Costello, Senior Lecturer in International Child Health, Institute of Child Health, UK

Abstract: This study of 603 children showed that seven per cent of those between the age of one week and seven years who were admitted to a paediatric unit with a serious illness such as malnutrition or malaria had hypoglycaemia (low blood sugar). Hypoglycaemia was defined as a blood sugar less than 2.2mmol/l.

Comment: Many health workers know that newborns are especially vulnerable to hypoglycaemia but few appreciate that it may also be a problem in severely ill children. Health workers should note that the method used to detect blood glucose – capillary fingerprick blood onto a test strip – does produce variable results and tends to underestimate the level of blood glucose compared with laboratory measurements. Nonetheless, if you have a seriously ill child or a suspect level on a blood glucose strip, ensure the child gets an adequate glucose intake from feeding or intravenous fluids and arrange for a laboratory blood glucose test (if available).

QUIZ

Test yourself to see if you have understood the main messages in this issue. Decide whether the following statements are true (T) or false (F).
Answers on page 2.

Many children's lives can be saved by:

1. prompt identification of very ill children T/F
2. hanging emergency treatment guidelines in clinical areas T/F
3. correct assessment and frequent monitoring of sick children T/F

In a convulsion, the following are emergency measures:

4. lay the child on his or her back so you can give cardiac massage T/F
5. cover the child to keep him or her warm T/ F
6. talk to the child so he or she cannot become unconscious T/F

Correct treatment of ARI:

7. in a two year old child with severe pneumonia is cotrimoxazole T/F
8. in a one week old baby with severe pneumonia is benzylpenicillin T/F
9. in a seven month old child with very severe pneumonia is benzylpenicillin T/F

Important points to remember when treating diarrhoea are:

10. stop food by mouth until diarrhoea stops T/F
11. give IV fluids rapidly for severe dehydration T/F
12. antidiarrhoeal drugs should not be given in dysentery T/F

When children have fever:

13. it may be caused by malaria and meningitis T/F
14. sponging with warm water is necessary to reduce fever T/F
15. complications could include convulsions and hypoglycaemia T/F

Miscellaneous questions

16. low blood sugar can occur in serious illness T/F
17. fever is rare and only occurs in serious illness T/F
18. a job aid jogs the memory T/F

The following back issues of *ARI News* and *Dialogue on Diarrhoea* are relevant to this issue of *CHD*. If you would like to receive one or more of these issues, please write stating the newsletter and issue number you would like.

ARI News	*Dialogue on Diarrhoea*
No 30 Malnutrition and ARI	No 55 (supplement) Epidemic dysentery
No 29 Oxygen	No 48 (supplement) Persistent diarrhoea
No 28 Meningitis and malaria	No 44 (supplement) Shigellosis
No 27 Treating wheeze	

Child Health Dialogue provides a forum for t exchange of information about the preventic and treatment of five key childhood illnesses acute respiratory infections, diarrhoea, mala malnutrition and measles.

The international English edition is published fou times a year by AHRTAG in the UK. Together wi regional editions, it has a combined worldwide circulation of 240,000 copies.

Publishing partners for regional editions
Chinese: Institute of Medical Information, China **English for India:** Christian Medical Association India; **French:** Consultants at USAID/BASICS, Senegal; **Gujarati and Hindi:** Centre for Health Education, Training and Awareness, India; **Portuguese:** Consultants at University Eduardo Mondlane, Mozambique; **Spanish:** PAHEF/Gru CID, USA; **Tamil:** Rural Unit for Health and Soc Affairs, India; **Urdu and English:** Shirkat Gah, Pakistan; and **Vietnamese:** National Institute of Hygiene and Epidemiology, Vietnam

Scientific editors Dr Harry Campbell and Dr William Cutting
Executive editor Andrew Chetley
Assistant editor Coral Jepson
Design & production Ingrid Emsden

Editorial advisers
Fred Abbatt (UK)
Dr Astier Almedom (UK)
Ann Burgess (UK)
Dr David Bratt (Trinidad and Tobago)
Dr Carlos Campbell (USA)
Dr Adriano Cattaneo (Italy)
Dr Anthony Costello (UK)
Dr Elvira Dayrit (The Philippines)
Dr Shanti Ghosh (India)
Dr Adenike Grange (Nigeria)
Dr Norbert Hirschhorn (USA)
Dr Greg Hussey (South Africa)
Dr Sharon Huttly (UK)
Professor Zai-fang Jiang (China)
Professor Mushtaq Khan (Pakistan)
Dr Nagwa Khallaf (Egypt)
Dr Vijay Kumar (India)
Dr Claudio Lanata (Peru)
Dr Kevin Marsh (Kenya)
Dr Eugene Nyarko (Ghana)
Professor Francis Onyango (Kenya)
Suzanne Prysor-Jones (USA)
Catherine Reed (UK)
Dr Jon Rohde (India)
Dr David Roberts (UK)
Dr David Robinson (WHO)
Dr Felicity Savage (WHO)
Dr Mohammed Abdus Salam (Bangladesh)
Dr Frank Shann (Australia)
Dr Mark Steinhoff (USA)
Professor Andrew Tomkins (UK)
Professor Dang Duc Trach (Vietnam)
Dr Cesar Victora (Brazil)
Dr Ronald Waldman (USA)

With donor support from
Caritas (The Netherlands), European Union, C Ruben and Elisabeth Rausing Trust, UNICEF,

Reproducing articles
AHRTAG encourages the reproduction of arti this newsletter for non-profit uses. Please cle credit AHRTAG as the source and send us a the reprinted article.

ISSN 1363-2094
Registered charity no. 274260
Printed by Russell Press, Nottingham

SUBSCRIPTION DETAILS
To receive *Child Health Dialogue* please write details about your work to:
AHRTAG
Farringdon Point, 29-35 Farringdon Road
London EC1M 3JB, UK
Telephone +44 171 242 0606
Fax +44 171 242 0041
E-mail ahrtag@gn.apc.org

Annual subscription charges

Readers in developing countries and students from developing countries	Free
Other students	£6/$1
Individuals elsewhere	£12/$
Institutions elsewhere	£24/$

Discount available on bulk orders.

Published by AHRTAG

12

MATERIAL ON HIV/AIDS

SENT BY

MEDICAL MISSION INSTITUTE

UNIT FOR HEALTH SERVICES AND HIV/AIDS

SALVATORSTR. 22

D-97074 WÜRZBURG

GERMANY

Von: AIDS 98 treatment-access forum <treatment-access@hivnet.ch>
An: treatment-access@hivnet.ch <treatment-access@hivnet.ch>
Datum: Donnerstag, 25. Juni 1998 09:00
Betreff: [131] RE: UK NGO AIDS Consortium project - Statement [6]

Statement from the international seminar on access to treatment for HIV in developing countries held in London on 5 and 6 June 1998

We agree on the following:

It is unacceptable for anyone to suffer or die from lack of access to adequate or appropriate treatment and care.

We are therefore committed to reducing the inequities in the availability of treatment and care for people with HIV

We recognise that discussion of anti-retrovirals and access to treatment highlights the increasing inequality between and within developing and developed countries.

We understand the following:
* people with HIV/AIDS must play an integral part in the design, development and implementation of all policies and programmes relating to their treatment and care
* care is a comprehensive package that includes support, psychosocial care and treatment provided to individuals, families and communities to improve quality of life. Community participation is an essential part of this comprehensive package.
* treatment includes preventive, curative, and palliative interventions and effective traditional or complementary health care
* drugs are one element of treatment. Drugs in this context include those for prevention, primary care (including opportunistic infections), palliative drugs, anti-retrovirals and other supplies necessary for treatment.

Improving the quality of and access to primary health care is a fundamental first step.

The principle of equitable access to treatment is central. We understand this to mean:
* treatments which are available for other people must also be available to people with HIV
* decisions and policies about making treatments available for the first time in any particular country should be considered carefully within the context of national health policy and capacity.

We agree that there is a right to relief from pain and other distressing symptoms.

We agree that palliative care needs wider application in the HIV/AIDS context. In particular this implies training of health professionals in parallel with making available affordable drugs for pain control including oral morphine.

We recognise that anti-retrovirals are being used in most countries, often inappropriately. Governments and NGOs have the responsibility to recognise this reality.

When considering anti-retrovirals for interruption of vertical transmission, the need for the following should also be considered
* comprehensive treatment for sexually transmitted diseases

* ante-natal care, safe childbirth and postnatal care for mother and child
* treatment of opportunistic infections in women including pregnant women
* prevention of transmission for women including pregnant women
* safe blood supply including appropriate use of transfusions among postnatal women and new-born children

We agree that different approaches are needed in different settings.

However the following are common to all settings:

* the need for adequate training, education and information, e.g. for: people living with HIV/AIDS; health and social workers (including traditional healers and complementary practitioners); the family; the community and political and religious leaders regardingrpalliative care (which includes psycho-social care and counselling); sexually transmitted diseases and prevention strategies; opportunistic infections and anti-retroviral treatments.

The need for :
* adequate infrastructure to deliver care safely - but the lack of infrastructure should not be used as an excuse for not advocating for better care and treatment
* support for home based care, primary care and a functioning secondary level care
* monitoring of access to care
* evaluation of outcomes

* There is a need to have a better understanding of the roles of different actors (e.g. political, activist, and commercial) concerned with access to care so that they work together and avoid the negative effects of unco-ordinated action or prejudice, whether on the basis of HIV infection or other grounds such as sexual orientation, ethnic origin, colour, displacement or route of infection.

* It is important to recognise the different roles of international and national NGOs, civil society organisations, people infected with HIV and those affected by HIV in order to understand and value their different standpoints in relation to:
- the care of people with HIV/AIDS
- identifying and addressing barriers to care in resource poor settings
- the impact of structural adjustment programmes and unpayable debt on access to appropriate care
- National governments have a responsibility to develop, disseminate and implement national policies relating to access to care and treatments and rational drug use.
- Civil society organisations (including national and international NGOs, people with HIV/AIDS, people affected by HIV/AIDS and community based organisations) have a responsibility to respect and co-ordinate their work in line with national and international policies but to advocate for change when policies are inconsistent, inadequate or detrimental.
- Civil society organisations (including national and international NGOs, people with HIV/AIDS, people affected by HIV/AIDS and community based organisations) should be included in the development of national policies.

UK NGO AIDS Consortium
Email: ukaidscon@gn.apc.org

- A posting from treatment-access@hivnet.ch
- For anonymous postings, add the word "anon" to the subject line
- To join or leave this forum, add the word join or leave to the subject line
- Browse postings at: http://www.hivnet.ch:8000/treatment-access/tdm

13

MATERIAL ON HIV/AIDS

SENT BY

MEDICAL MISSION INSTITUTE

UNIT FOR HEALTH SERVICES AND HIV/AIDS

SALVATORSTR. 22

D-97074 WÜRZBURG

GERMANY

MAP

Provisional Report

The Status and Trends *of the* HIV/AIDS Epidemics in the World

Geneva
Switzerland
June 26, 1998

Monitoring the AIDS Pandemic (MAP) Network

MAP is a collegial network of internationally recognized technical experts seeking to assess the status and trends of the global HIV/AIDS pandemic. Created in 1996, MAP is jointly sponsored by its founding institutions:

- **Family Health International, funded by the United States Agency for International Development,**
- **The François-Xavier Bagnoud Center for Health and Human Rights of the Harvard School of Public Health, and**
- **The Joint United Nations Programme on HIV/AIDS (UNAIDS).**

MAP's more than 120 members in 40 countries are epidemiologists, modelers, economists, and social, behavioral, public health and international development specialists, recruited through a nomination process and currently guided by an Interim Global Steering Committee.

MAP hopes to make its greatest impact by providing objective, timely and high-quality analyses of the most current information on the pandemic, for the improvement of prevention, care and social interventions worldwide.

MAP workshops and membership meetings are held in conjunction with regional and international HIV/AIDS conferences. This enables MAP to function on a small budget and to distribute results from its analyses promptly to conference participants.

AIDS service organizations and regional networks of people living with HIV/AIDS are invited to participate in MAP workshops. MAP works towards building consensus in an atmosphere of collegiality, cultural sensitivity, and mutual respect for conflicting points of view. It functions on the basis of volunteerism and personal and institutional contributions, with limited financial support from international organizations, including UNAIDS, and provides an independent perspective on issues raised by the HIV/AIDS pandemic.

MAP Co-Chairs:
Peter Lamptey
Daniel Tarantola

MAP Interim Steering Committee Members

Chris Archibald
Stephen Blount
Tim Brown
Jean-Baptiste Brunet
Jim Chin
Antonio Gerbase
John Kaldor
Bernhard Schwartländer
Karen Stanecki DeLay
John Ward
Fernando Zacarias
Debrework Zewdie

MAP Interim Secretariat:
François-Xavier Bagnoud Center for Health and Human Rights
Harvard School of Public Health
651 Huntington Avenue, Bldg. IV
Boston, MA 02115 U.S.A.
Telephone: 1+(617) 432-0656
Fax: 1+(617) 432-4310
E-mail: MAP@hsph.harvard.edu

Previous Reports Produced by MAP

- *Workshop on the Status and Trends of the HIV/AIDS Epidemics in Africa: Final Report*, Kampala, Uganda, December 1995 (English and French)
- *The Status and Trends of the Global HIV/AIDS Pandemic Final Report*, Vancouver, Canada, July 1996 (English, French, Spanish, Japanese, Chinese and Russian)
- *The Status and Trends of the HIV/AIDS Epidemics in Asia and the Pacific: Final Report*, Manila, Philippines, October 1997 (English, French, Japanese)
- *The Status and Trends of the HIV/AIDS Epidemics in Latin America and the Caribbean: Final Report*, Rio de Janeiro, Brazil, November 1997 (Spanish and English)
- *The Status and Trends of the HIV/AIDS/STD Epidemics in Sub-Saharan Africa: Final Report*, Abidjan, Côte d'Ivoire, December 1997 (French and English)
- *The Status and Trends of the HIV/AIDS Epidemics in Eastern Europe*, Veyrier du Lac, France, June 1998 (English, Russian) *Forthcoming*

MAP reports are available through the following websites:
Family Health International
<http://www.fhi.org>
FXB Center for Health and Human Rights
<http://www.hri.ca/partners/fxbcenter>
UNAIDS
<http://www.unaids.org>

Acknowledgments

MAP would like to express its gratitude to the Marcel Mérieux Foundation for having very graciously and generously co-hosted this symposium of the MAP Network. By extending its conference and lodging facilities at Les Pensières, Veyrier du Lac, France, the Marcel Mérieux Foundation made it possible for MAP members to meet in a wonderful working environment. MAP is grateful to the Joint United Nations Programme on HIV/AIDS (UNAIDS) for providing the financial resources to sponsor the attendance of some of the participants and covering some of the overall local cost.

MAP wishes to express its warmest thanks to the American Foundation for AIDS Research (AmFAR) for its contribution to the production and dissemination of this report. The AmFAR support will ensure that the most current analysis of the status and trends of the HIV/AIDS epidemics reaches those who were able to attend the XII World Conference on AIDS and, more importantly, those who were unable to do so.

MAP would also like to acknowledge the Joint United Nations Programme on HIV/AIDS (UNAIDS) and the World Health Organization for their June 1998 report on the Global HIV/AIDS Epidemic and on their production of the Epi Fact Sheets which were developed in close collaboration with colleagues from national AIDS programs from around the world. These documents served as useful resources in the preparation of this report.

This meeting included discussions on themes which were introduced through the presentation of working papers. The authors of these working papers are gratefully acknowldeged here:

- The Global epidemiology of HIV/AIDS: Bernhard Schwartländer
- The HIV/AIDS Epidemic in Europe: Jean Baptiste Brunet and Françoise Hamers
- The HIV/AIDS Epidemics in Eastern Europe: Vadim Pokrovski and Karl-Lorenz Dehne
- The HIV/AIDS Epidemics in Africa: Tom Zhuwau
- The HIV/AIDS Epidemics in Latin America and the Caribbean: Carlos Carceres and Euclides Castilho
- The HIV/AIDS Epidemics in North America: Kevin De Cock, Donald Sutherland and Chris Archibald
- The HIV/AIDS Epidemics in Asia and the Pacific: John Kaldor
- The Global Epidemiology of Sexually Transmitted Diseases: Antonio Gerbase
- The Global Patterns of HIV Transmission: Karen Stanecki DeLay and Jim Chin
- Global Migration and HIV/AIDS: Michel Caraël, Alix Adrien and Jacqueline Weekers
- Transmission of HIV in the Health Care Setting: Anne Buvé
- The Global Map of Neglected Behaviors: Knowledge and Action Gaps: Tim Brown
- Mother-to-Infant Transmission of HIV: Richard Marlink
- Orphans of AIDS: A Demographic and Socioeconomic Impact of HIV/AIDS Epidemics: Peter O. Way
- The Interaction Between HIV and Tuberculosis Control Programmes: Peter Godfrey-Faussett
- The Global Inequity in HIV Care: Eric Van Praag

Contributors to the preparation of the preliminary draft of this report, produced within 24 hours of the meeting, are thankfully acknowledged: Alix Adrien, Chris Archibald, Tim Brown, Anne Buvé, Jean-Baptiste Brunet, Carlos Caceres, Michel Caraël, Saulinus Chaplinskas, Hehe Cheng, James (Jim) Chin, Kevin De Cock, Karl-Lorenz Dehne, Alexander Goliussov, Sofia Gruskin, Françoise Hamers, John Kaldor, Yuri Kobyshcha, Alexander Kosukhin, Veena Lakhumalani, Peter Lamptey, Su-su Liao, Richard Marlink, Lalit M. Nath, Angus Nicoll, Mary O'Grady, Karen Stanecki De Lay, Bernhard Schwartländer, Daniel Tarantola, Eric van Praag, Peter O. Way, Jacqueline Weekers and Alan Whiteside.

Thanks are also extended to Johanna Van Hise Heart, Elena Markova and Carmen Buencamino for the active staff assistance they contributed to the preparation of the meeting and to the production of this report.

Publications and other work products arising from the work of the MAP Network are the sole responsibility of the Network. The contents of this report and other work products do not necessarily reflect the views or policies of MAP's founding and sponsoring institutions

Table of Contents

		Page
	The MAP Network	*i*
	Previous reports produced by MAP	*ii*
	Acknowledgements	*iii*
1	Introduction	1
2	The State of the HIV/AIDS Epidemics	2
3	Migration and HIV	10
4	Inequities in Care and Support	12
5	Mother-to-Child Transmission	14
6	HIV Transmission in the Health Care Setting	16
7	Orphans	18
8	Tuberculosis and HIV	21
9	The Map of Neglected Behaviors	23
10	Recommendations	26
11	Annex: List of Participants	27

1. Introduction

This MAP Symposium was the fifth in a continuing series of regional and global MAP "Status and Trends" symposia organized to expand the understanding of the trajectory and determinants of the HIV/AIDS pandemic. The symposium on the Status and Trends of the HIV/AIDS Epidemics in the World was held at the Mérieux Foundation, Veyrier du Lac, France, June 23-25, 1998. It preceded by a few days the 12th World AIDS Conference on AIDS held in Geneva, Switzerland, June 28-July 3, 1998.

The previous "Status and Trends" MAP symposia contributed to focusing the international attention of policymakers, programme managers and the media on the global and regional HIV/AIDS epidemics. The MAP Status and Trends Symposium in Veyrier du Lac brought together 59 MAP members and invited participants from around the World (see list of participants in Annex). The symposium aimed at the following objectives:

- To present and share current knowledge on the status and trends of the HIV/AIDS epidemics in the world;
- To review the various epidemiological and behavioural patterns among the HIV/AIDS epidemics and explore current critical issues;
- To determine specific data needs for monitoring and forecasting the HIV/AIDS epidemics in the world and identifying response gaps; and
- To produce and disseminate a report to participants attending the 12th World AIDS Conference and to those who, although concerned with HIV/AIDS, were unable to attend it.

MAP structured its symposium agenda so as to add its analysis of specific features of the pandemic to the excellent June 1998 report on the Global HIV/AIDS epidemic released by the Joint United Nations Programme on HIV/AIDS (UNAIDS) and the World Health Organization (WHO). As UNAIDS and WHO prepared their report in collaboration with national experts including many MAP members and in consultation with the MAP secretariat, it was possible to ensure that the reports produced by UNAIDS/WHO and by MAP complemented each other optimally.

The June 1998 MAP symposium built on a series of regional MAP meetings which examined the HIV/AIDS situation Asia and the Pacific (Manila, Philippines, October 1997), and Latin America and the Caribbean (Rio de Janeiro, November 1997), Sub-Saharan Africa (Abidjan, Côte d'Ivoire, December 1997). Reports on these symposium have been widely distributed at regional conferences on AIDS and through the worldwide web (see web sites below). A regional meeting on HIV/AIDS in Eastern Europe (Veyrier-du-Lac, France, June 1998) resulted in a report which will be released shortly. The descriptive and analytical contents of these regional MAP reports fed into the present reports in the form of brief summaries only.

Co-authored by the MAP Symposium participants, the present report reflects as best it can the analysis, determinations and recommendations brought forward during the symposium. Its aim is to provide information that can be used by international, national and local bodies to review the most important aspects of the evolution of the HIV/AIDS epidemics in the world, recognize the current status of and trends within these epidemics, and take action to advance the regional and global responses to these epidemics. It is hoped that the MAP report will bring into focus the multifaceted aspects of the most critical gaps in the information needed to monitor effectively the HIV/AIDS epidemics and the responses brought against them around the world.

2. The State of the HIV/AIDS Epidemic

As of mid-1998, the HIV/AIDS pandemic continues to spread unequally around the world. In many cities in sub-Saharan African countries more than a quarter of young and middle-aged adults are infected with HIV, whereas in most developed countries, the number of annual AIDS cases continues to decrease. The status of HIV epidemics in most other areas of the world remains uncertain because of inadequate data on the prevalence of HIV-risk behaviours. This report complements the UNAIDS/WHO report on the global HIV pandemic released in June 1998.

HIV epidemics in Africa: unabated, diverse, and complex

Of people living with HIV around the world, six in every 10 adult men, eight in every 10 adult women and over nine of every 10 children infected are in sub-Saharan Africa. Of the global estimated 16,000 HIV infections a day, 7,500 of them occur in sub-Saharan Africa. Such factors as growing economic disparity, social and cultural uprooting linked to intense migration, insufficiencies in prevention and care programmes and power gaps linked to gender, age and economic differences continue to fuel HIV epidemics across the continent.

Africa is not uniformly affected by HIV/AIDS: a mosaic of epidemics is progressing with varied intensity and velocity. For example, in antenatal clinics of several cities in southern Africa, up to 45 percent of women tested during pregnancy carry HIV, a rate ten or more times greater than in pregnant women seen at urban antenatal clinics in most countries in Central or West Africa. Subregional boundaries which, until recently, helped in the mapping of the epidemics in Africa can be misleading. In West Africa, HIV rates in pregnant women may be ten times higher in Abidjan, Côte d'Ivoire, than in Dakar, Senegal. In urban areas, a much higher proportion of adults are HIV-infected than in trading sites along highways where, in turn, the prevalence of HIV is higher than in rural villages. While local migratory and behavioural patterns have been suggested to explain these differences, how these patterns interconnect through complex social and sexual networks remains insufficiently explored.

Heterosexual contacts and mother-to-infant transmission of HIV account for the vast majority of HIV infections in the region, and ongoing prevention programmes must expand their reach in order to curb the spread of HIV through these routes. The information required to monitor these trends and the impact of prevention programmes remains incomplete. For example, while data exist on the proportion of 15- to 49-year-old pregnant women who are infected with HIV, little is known about the levels of infection in girls younger than 15. In a community-based study near Lusaka, Zambia, 6 percent of girls aged 15–16 were found to be HIV-infected, a rate far higher than in boys of the same age. Apart from occasional and rarely published studies in the military, knowledge is also incomplete about trends of HIV in sexually active men. Among women, the dynamics of HIV infection are interpreted on the basis of prevalence rates of HIV infection - the proportion of women infected, regardless of when they acquired HIV infection. However, there is a paucity of incidence data - the proportion of women in a specific age group who acquire infection within a time period.

Anecdotal evidence supports the assertion that sex between men does occur in the region. In the absence of documented evidence that such a pattern of sexual behaviour prevails, in particular in single-sex male communities around industrial sites and in prisons, prevention programmes are neglecting the needs of these vulnerable populations. Likewise, the rising availability of injectable substances such as heroin, especially at new transit points for drug trafficking, creates an additional risk for HIV spread in sub-Saharan Africa. The transmission of HIV infection through unscreened blood transfusion continues to be a concern in several countries in sub-Saharan Africa. In this region in 1995, over 2.5 million blood transfusions were administered - most of them to women and children - and of those, nearly a quarter had not been screened for HIV antibodies. Similarly, occupational exposure to HIV by health care workers has received too little attention (refer to section 6).

Asia Pacific region

With over 60 percent if the world's population, the Asia-Pacific Region presents a wide diversity of HIV-related risk environments, in terms of behavioural, political and cultural factors. Within the framework of this diversity, there has also been a wide range of HIV epidemics and responses, both across and within countries. It is not therefore possible to present a simple analysis of the actual and potential occurrence of HIV infection in this vast region.

Our understanding of the HIV epidemic and its determinants in the Asia-Pacific Region has improved substantially over the past 3-5 years, as a number of countries have implemented comprehensive surveillance systems for HIV prevalence, and sexual and injecting risk behaviours. Despite these advances, a number of countries still have a limited capacity to assess the occurrence of HIV infection and related behaviours, and to monitor the impact of interventions.

A recent factor of importance in the Asia-Pacific environment has been the economic tumult of the past year. While various predictions have been made of the potential impact on the HIV epidemic, it is not possible to state with any certainty whether their net effect will be to increase or decrease the incidence of risk behaviour or HIV transmission.

Since extensive HIV transmission has been a very recent phenomenon in a number of Asia-Pacific countries, there has so far been little experience with the care and support of people with HIV-related illness. Apart from Australia, Thailand and Japan, few countries have a healthcare workforce, which is adequately prepared to care for substantial numbers of people developing HIV-related illness.

Without simplifying too much, it is possible to classify the differing patterns of HIV transmission into broad categories, based on available surveillance data. In Australia and New Zealand, the virtually all HIV transmission has been through sex between men, and the incidence of transmission via this route has long been recognized as having declined substantially in the 1980s. In a few countries, such as Thailand, Cambodia and parts of Myanmar and India, heterosexual transmission has been extensive, mediated through large-scale sex industries but extending now to the regular partners of sex workers' male clients.

Some countries have HIV epidemics among injecting drug users (IDU) with limited associated heterosexual transmission. These include countries such as Thailand, Malaysia, Vietnam, and some areas of India and China.

Other countries have limited, but well documented spread of HIV infections, such as the Philippines, Indonesia, Japan, and South Korea. Several countries have not reported substantial numbers of HIV infection, but do not appear to have comprehensive, ongoing surveillance systems. Papua New Guinea, Pakistan and Bangladesh are countries which may have a substantial risk environment, and need to strengthen their surveillance activities.

The analysis of HIV epidemic trends in the region becomes more meaningful when a focus is placed on populations whose cultural and social affinity and networks transcend geopolitical borders. A new geography of HIV/AIDS in the region then emerges that helps recognize the foci of intense HIV spread. These include large metropolitan areas in western and southern India (Mumbai, Chinnai); the India/Nepal border area; the larger "Golden Triangle," which reaches out to northern Thailand, eastern Myanmar, but also encompasses the areas of Manipur in India and Yunnan in China; and the Mekong delta area, which includes Cambodia and southern Vietnam. To gain better understanding of the dynamics of HIV epidemics, factors of affinity between populations as well as mobility patterns must be explored and mapped out.

Large-scale heterosexual HIV epidemics ahead? Sudden and sharp increases in HIV incidence among persons engaged in very high-risk behaviours can and have occurred in Asia. However, the lack of quantitative and qualitative epidemiological, behavioural and social information on the nature of and linkages between sexual networks in any of these countries rules out any reliable prediction of the future course of HIV epidemics in these countries. To recognize the threat of emerging or fast-growing epidemics in certain populations is essential to an early and effective response. To acknowledge the possibility that, in other populations, rapid and extensive spread of HIV may not occur is equally crucial as policy and decision-makers may, on the basis of this information, orient efforts and resources towards people who are most at risk.

India: the epidemic continues

With a population of close to one billion - roughly half of them in the most sexually active age group of 15 to 49 - an estimated adult prevalence rate of about 0.6 to 1 percent translates to between three and five million infected persons, a figure higher than any other single country. However, the distribution of HIV/AIDS in India is not uniform. The epidemic is focussed very sharply in a few states with most of India having extremely low rates of infection. It is noteworthy that 21 of the 31 states only report four percent of the total AIDS cases. The major impact of the epidemic is being felt in Maharashtra in the West, Tamil Nadu in the South with adjacent Pondichery, and Manipur in the northeast. While the epidemic is predominantly heterosexual in nature over most of India, the northeastern states have a severe epidemic among IDUs. In Manipur, IDU infection rates are now 70 percent or more.

In those parts of India where the epidemic is most firmly entrenched, the infection has spread out of those groups traditionally considered most at risk. From being highly concentrated in sex workers and patients attending sexually transmitted infection (STI) clinics, the HIV has spread to the general population. In Maharashtra, antenatal clinics in Mumbai now report a 4.5 percent prevalence, and one clinic in Pune reports over 5 percent. In Chinnai between 1.2 and 2.3 percent of antenatal cases are reported to be HIV positive. Even in Manipur, where the infection is largely focussed on IDU, ANC attendees have a prevalence rate of 1.2 percent. The sentinel surveillance reports for early 1998 have brought to attention the fact that not only is the epidemic spreading to previously less affected groups within the severely affected states, but states that had relatively low infection rates are now beginning to have a serious problem. A case in point is the state of Andhra Pradesh, which has reported a 24 percent prevalence rate in STI patients and about one percent in antenatal clinics.

The data from India highlight the fallacy of considering average national figures for measuring the epidemic. India clearly has areas very severely affected by the epidemic, and yet the major portion of the country has a very minor HIV/AIDS problem at this time. Unless this differential is taken into account for planning interventions, efforts are likely to be inadequate in some areas, and inappropriate in others.

Data on both the distribution and the molecular epidemiology, also point out that HIV does not respect national or state boundaries. Plans for coping with the epidemic have to be regional rather than confined to political boundaries. Clearly the epidemic in Manipur is closely linked to that in the adjacent parts of Myanmar, Bangladesh and Thailand. The nature of the virus and the route of transmission are the same. To be effective, the interventions must also be in concert.

HIV/AIDS in Latin America and the Caribbean

The Latin America and the Caribbean region encompass the countries and territories in the Western Hemisphere from Mexico south and east to the tip of the Southern Cone of South America. The aggregate population of the forty-four countries in the region totals 476 million people, 8.4 percent of the global total of 5.7 billion people. An estimated more than 1.6 million people are living with HIV/AIDS in Latin America and the Caribbean, equivalent to 5.4 percent of the total number of people around the world living with HIV/AIDS as of January, 1998

HIV epidemics in Latin America and the Caribbean reflect the heterogeneity of HIV epidemics worldwide: they differ from country to country and within countries. For the most part, HIV in this region is concentrated in populations living on the social and economic margins of society. HIV/AIDS has taken its greatest toll on men who have sex with men (MSM) and injecting drug users, and in some places there is clear evidence of increasing spread among the impoverished and illiterate segments of society. Systematic data collection on these groups is difficult, and information currently is scant.

Rising rates in women show that heterosexual transmission is becoming more prominent. The extent to which infections in MSM and IDU may fuel extensive spread of HIV in the heterosexual population remains unclear. In Brazil, the male/female ratio of AIDS cases has decreased, due to the spread of HIV in women through heterosexual transmission as well as among women who are using injecting drugs. Although rates in pregnant women are still comparatively low in the region in general, they have reached levels of one percent in Honduras and more than three percent in Porto Alegre, Brazil. Rates are substantially higher in the Caribbean. In Haiti, more than eight percent of the pregnant women in the country were found to be infected with HIV in 1996.

As limited as the region's HIV epidemic has been so far, AIDS already has had a major impact. In Mexico, AIDS was the third leading cause of death in men between 25 and 34 years of age in 1995, and the trend is increasing. In the Brazilian State of São Paulo, AIDS has been the leading cause of death among women aged 20 to 34 since 1992. There are, however, two reasons for hope: injecting cocaine use has decreased in some areas, including in São Paulo, and a recent drop in AIDS mortality - similar to that seen in Western Europe and North America - also has been recorded in São Paulo and is attributed to the increasing use of antiretroviral therapy.

Like other regions of the developing world, Latin America and the Caribbean encompasses countries spanning the whole spectrum of development and contains highly diverse and localized epidemics with different driving forces and transmission routes. In Mexico, sex between men is the main transmission route in major cities, and drug-related transmission has begun in the northwestern part of the country; heterosexual transmission is more common along the southern border and in rural areas. Transfusion-related infections have diminished dramatically in the last eight years.

Five countries of Central America appear to have epidemics that are either in an early phase or show slow growth. In Honduras, however, the epidemic appears to be more established. While Honduras accounts for only 17 percent of the subregion's population, it has reported more than half of the AIDS cases from Central America. Infections in this subregion are seen mainly in capitals and major cities, where commercial sex plays a role, while rural cases are related to migration. Since 1987 there has been a dramatic shift to heterosexual transmission and to younger population groups.

In Haiti and the Dominican Republic in the Latin Caribbean, HIV is spreading mostly through heterosexual intercourse. These countries have reported HIV prevalence rates among pregnant women attending antenatal clinics ranging from one to nine percent while Cuba is showing rapidly increasing infection among MSM. In the other countries of the Caribbean, a few epidemics are evident in IDUs and MSM. Heterosexual transmission, however, has been the main route since 1986, and HIV prevalence in pregnant women ranges from one to seven percent. Tourism and high population mobility characterize these island nations, and both factors can influence the spread of HIV.

The predominant mode of transmission in the five countries of the Andean Area continues to be sexual contact among MSM. In general, HIV prevalence among pregnant women is less than one percent, although it has shown an increasing trend in the last few years. This slow increase probably reflects transmission from MSM and IDU to their female sex partners.

A mosaic of transmission routes accounts for the more than 500,000 HIV infections currently estimated in Brazil. Transmission through MSM and IDU has dominated so far, but there is a growing epidemic fueled by heterosexual transmission. In urban areas, HIV prevalence in pregnant women ranges from one to 5 percent. Prevalence among female sex workers is around 5 percent and in injecting drug users ranges from 33 to 60 percent. Overall, the epidemic is moving into younger, more impoverished and more rural populations.

The Southern Cone shows a mixed picture, but transmission occurs mainly among MSM and injecting drug users. The epidemics are occurring in major urban areas. Argentina reports HIV prevalence now ranging from 1 to 3 percent among pregnant women and 6 to 11 percent among female sex workers. Uruguay also shows an epidemic concentrated on MSM and IDU with some limited spread to the general population, while Chile and Paraguay show low grade epidemics.

HIV/AIDS in North America

HIV infection incidence and HIV case surveillance: Approximately 40,000 new HIV infections occur in the US annually, over one third in women and over two thirds in ethnic minorities. Recent studies in STD clinics in seven US cities showed HIV infection incidence rates in MSM ranging from 1.5-8.2/100 person years (PY), and in heterosexuals from 0.06-1.1/100PY. In IDUs attending drug treatment centers the annual incidence was higher on the east (0.9 percent, one percent) than west (0.5 percent, 0 percent) coasts. HIV incidence rates among MSM in Canada's major cities have declined from a range of 7 to 11/100 PY in the 1980s to 1 to 2/100PY in 1995-97. There were an estimated 4,200 new HIV infections in Canada during 1996: 29.5 percent among MSM, 46.9 percent among IDU, 6.9 percent among MSM-IDU, and 16.7 percent among heterosexuals. This estimated incidence is lower then the peak annual HIV incidence of about 5,000-6,000 in the mid-1980s, but higher than the estimate of 2,500-3,000 per year for the period 1989-94. Most of this increase in HIV infections has been in IDUs whose recent annual incidence has been as high as 6.5/100 PY in Montreal and 18.2/100PY in Vancouver

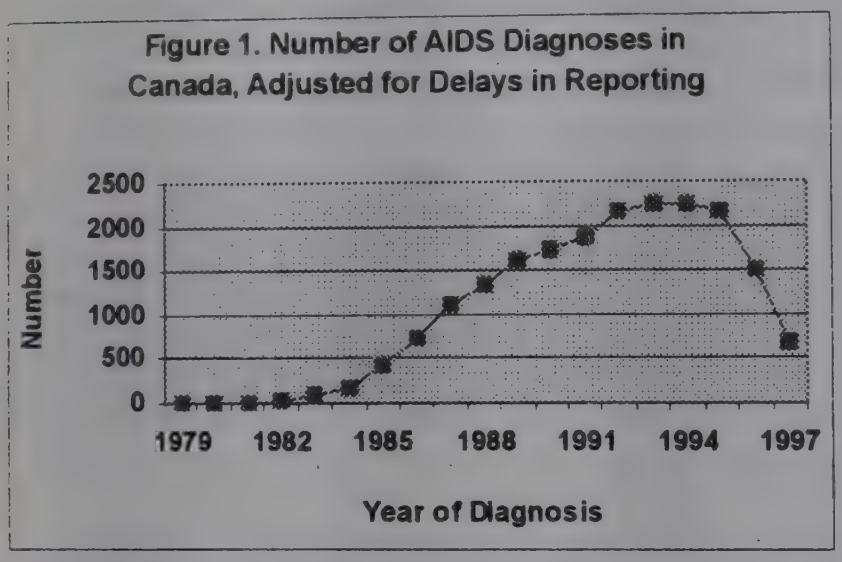
HIV case surveillance data represent reports of persons diagnosed with HIV infection and offer minimum estimates of the numbers of persons infected with HIV who require medical services. Despite potential lack of completeness, HIV surveillance provides a more up-to-date description of the epidemic than reported AIDS incidence, especially since the advent of more effective antiretroviral therapy. In Canada, the percentage of new HIV diagnoses in MSM declined from 74.6 percent in the period 1985-1994 to 37.6 percent in 1997; the percentage in IDU increased from 8.4 percent to 33.2 percent; and among women increased from 9.8 percent to 21.8 percent. In the US, HIV surveillance data show communities of colour, especially African Americans, to be disproportionately affected. Other groups in which HIV infection is occurring disproportionately include women and youth, especially those of colour.

An estimated 400-650,000 persons in the US are living with HIV without AIDS-defining diseases or symptoms. The prevalence of HIV infection in MSM attending STD clinics is elevated more homogeneously than in other populations, ranging from 3.7 percent in the mid-west to 31.4 percent in Houston. Among IDU HIV infection is concentrated along the east coast and in the south, with highs of 32.2 percent in Baltimore, 28.5percent in New York City, and 25percent in Atlanta. The overall prevalence of HIV infection in childbearing women in the US in 1994 was 0.15 percent, the geographic distribution of infection mirroring that in IDU and being highest along the Atlantic coast and in the south. Extreme differences existed in the distribution of HIV infection by race/ethnicity; prevalence was 22 times higher in blacks than whites in New York and 16 times higher in Florida Approximately two thirds of infected persons in both countries are believed to be aware of their HIV status.

An estimated 50,000-54,000 cumulative HIV infections had occurred in Canada by the end of 1996, with an estimated 40,100 Canadians living with HIV infection at end-1996 (including those living with AIDS). By exposure category, 63.1 percent of prevalent infections were among MSM, 4.2

percent among MSM-IDU, 17.7 percent among IDU, 13.7 percent among heterosexuals, and 1.3 percent among recipients of blood or blood products. HIV prevalence among IDU has increased dramatically in many Canadian cities (in Ottawa, from 10 percent in 1993 to 21 percent in 1997).

By end-1997, a cumulative total of 641,086 persons had been reported with AIDS in the US, of whom 84 percent were male and 16percent female. A total of 60,634 cases were reported in 1997, with 35 percent of adult cases in MSM, 24 percent in IDU, and 13 percent attributed to heterosexual contact. Important recent trends have been an increasing proportion of cases in women; a decreasing proportion among MSM; an increasing proportion attributable to heterosexual contact; and an increasing proportion in racial/ethnic minorities. In 1997, 45 percent of new AIDS cases were in non-Hispanic blacks, 33 percent in non-Hispanic whites, and 21 percent in Hispanics. The population-based incidence rates of AIDS in African American men and women in 1997 were seven times and 20 times greater, respectively, than in whites. Among males with AIDS, twice as many whites as blacks were MSM, while the proportion of AIDS cases in blacks that were in IDU or resulted from heterosexual exposure were three times greater than in whites.



By end 1997, a total of 15,528 cumulative AIDS cases had been reported in Canada (approximately 20,000 after adjustment for reporting delay). The proportion of new AIDS cases attributed to MSM has steadily declined from nearly 80 percent in the 1980s to just over 50 percent in 1997. By contrast, 20 percent of adult AIDS cases were in IDU in 1997, compared to less than 2 percent prior to 1990. The proportion of annual AIDS cases among women has increased from 4-6 percent during 1982-91 to 14 percent in 1997. Persons with IDU-associated AIDS were disproportionately of Aboriginal origin; compared with non-Aboriginal cases, the proportions of cases attributed to IDU in Aboriginal persons were 19 percent vs 3.2 percent for men, and 50 percent vs 17.4 percent for women.

The incidence of AIDS in the US in the first 9 months of 1997 was 14 percent lower than that in the same period for 1996. Better survival of persons with HIV/AIDS has resulted in an increase in the number of people living with AIDS to some 247,571 at end 1997. There has also been a sharp decrease in the trend in delay-adjusted AIDS cases since 1995 in Canada (Fig. 1). The total number of reported deaths from AIDS in the US in 1997 was 29,039, representing a 44 percent reduction compared with 1996. AIDS had emerged in 1993 as the leading cause of death in Americans aged 25-44 but dropped second after unintentional injuries in 1996. HIV infection remains the leading cause of death for black men and women of this age group but a decline in mortality has occurred in this population also.

Only 473 cases of AIDS in children were reported in the US in 1997, of which 62 percent were in blacks, 13 percent in whites, 23 percent in hispanics, and 2 percent in other or unknown groups. Between 1992 and 1996, the incidence of perinatally acquired AIDS declined 43 percent.

Implications for the future

The reductions in AIDS incidence and deaths in North America after 1995 are largely attributable to more effective antiretroviral therapy, although prevention efforts and the natural evolution of the epidemic may have contributed. Since the duration of benefit from antiretroviral therapy is unknown, it remains essential to monitor HIV infections, AIDS incidence, and deaths to detect changing trends, should they occur, in a timely fashion. HIV case surveillance should be conducted in an integrated fashion with AIDS case surveillance, but special studies of HIV infection incidence and prevalence, especially in high risk populations, will remain necessary. Behavioural surveillance and monitoring of access to care, adherence to therapy, and resistance to antiretroviral drugs will also be required.

Trends in pediatric AIDS reflect reduced mother-to-child transmission from increased adherence to guidelines for antenatal HIV testing of pregnant women and provision of zidovudine to those infected. Elimination of pediatric HIV infection is a realistic goal for industrialized countries, and will require HIV surveillance in women and infants, as well as monitoring of access to and quality of care.

Trends in HIV/AIDS in Canada and the US show common themes of reducing impact in MSM but an increasing burden among women and youth, and especially in communities of colour. Increasing proportions of new HIV infections and AIDS cases in Canada are IDU-associated, especially in Aboriginals. IDU-associated HIV/AIDS continues to play a central role in the epidemic affecting minorities of colour in the United States.

The HIV/AIDS Epidemic in Europe

Following detection of the first cases of AIDS in the early 1980s, AIDS incidence in Europe increased rapidly throughout the decade, continued to rise but at decreasing rates in the early 1990s, stabilized in 1994-1995 and declined since then. This overall trend is dominated by the trends in Western Europe that still accounts for over 90 percent of AIDS cases reported each year.

AIDS incidence should be interpreted keeping in mind that it reflects patterns of infections which occurred on average 10 years earlier and that HIV incidence peaked in the mid 1980s in western Europe. However, the size and abrupt nature of the decrease suggest that the recent and rapidly increasing uptake of new antiretroviral therapies has contributed significantly to AIDS trends since 1996.

Although in Europe the epidemic originally occurred predominantly among MSM, the subsequent predominance of IDU cases is due to the rapid and intensive spread of HIV through injecting drug use in countries of south-western Europe, particularly Spain, Italy and, more recently, Portugal. Heterosexual contact accounts for an increasing proportion of AIDS cases (24 percent in 1997). The diffusion of HIV in the population outside these high-risk groups appears to have remained limited. HIV prevalence among pregnant women, which provides an indication of the spread of HIV among women of childbearing age, has been fairly stable over time. In large western cities, it ranges from around 0.5 per 1000 in Berlin to 4.5 per 1000 in Barcelona. Although blood donors are clearly selected individuals at low risk for HIV and donor selection may have improved over time, the low (less than 5 per 100,000) and stable or even declining prevalence in blood donations in Western Europe is another indication that HIV tends to have remained confined to high-risk population.

Until 1995, Eastern European countries including the Asian republics of the former Soviet Union reported few HIV cases, mostly among homosexual men. Screening of both low risk groups such as blood donors and pregnant women and high-risk populations such as STD patients and drug users showed very low proportions infected in 1990-94.

Since 1995 HIV has spread rapidly among IDUs in cities of several countries, including Ukraine, Belarus, Moldova and the Russian Federation. Epidemics among drug users are also emerging in the Caucasus, the Baltic States, and in Kazakstan in Central Asia. More than 20,000 cases of HIV

infections among drug users in these countries have been reported by the end of 1997. UNAIDS and WHO estimate that the total number of HIV infections in the region may have risen from less than 30,000 in 1995 to more than 190,000 in 1997. Although HIV rates among STD patients in Ukraine are now growing at the same rate as they were among drug users two years ago, there is no clear sign of a substantial spread into the general heterosexual population yet. HIV prevalence rates among blood donors and pregnant women have increased, but most persons testing positive may have been drug users.

Fears of a second wave of HIV infections spread through sexual intercourse and following the current IDU associated epidemics are aggravated by the fact that the NIS are experiencing an epidemic of classic STIs, especially syphilis. In 1997, reported rates were as high as 262 per 100,000 population in some countries in the region.

Several factors seem to have been fuelling the HIV epidemic among IDU, including increased drug demand, supply, and consumption, migration and widespread local drug production. Despite shrinking resources, drug treatment services and police in Ukrainian, Russia and other countries have registered increasing numbers drug users, with estimates of their true number reaching more than one million in Russia alone. Most IDUs use home made opiates, but ephedrine use is also common. Local patterns vary and seem to change rapidly, with the use of synthetic drugs such as heroin and cocaine becoming increasingly widespread in major urban centers. No systematic assessment of geographical variations in drug use prevalence has been carried out.

HIV risk appears to depend on specific drug preparation and distribution patterns. Needle/syringe sharing has been reported from all categories of injecting drug users, but the use of home made opiates may be particular risky in that: a) equipment used during the preparation may be contaminated; b) ready-made drugs are sold in used and potentially contaminated syringes or other containers c) human blood is added to the drug solution as a cleansing agent during the production process (often coming from HIV infected persons). Ephedrine use is reportedly associated with increased sexual activity.

Several countries have started implementing harm reduction projects, although at a small scale. A few outreach and needle exchange programmes are operating in Ukraine, Belarus, Russian Federation and Kazakstan, and substitution therapy has been introduced in Latvia and Lithuania. In the Russian Federation, information about the risk of using human blood during drug preparation has been disseminated. In Ukraine, HIV information and disinfectants are provided to incarcerated drug users. Behavioural assessments suggests that these pilot projects have been successful in decreasing the number of IDUs who share equipment and in increasing the number of dealers who sell drugs in clean syringes.

Little is known about the size of sex workers populations in the Newly Independent States, and hardly any data on HIV levels and trends among sex workers exist. Several categories of sex workers have been described, including hotel and escort agency prostitutes, women who offer their services through advertisements, railway station and street prostitutes. In some countries most sex workers are foreigners, whereas in others most are local girls. A large number of women from Eastern European countries also work as sex workers in Western Europe, the Middle East, and even in India and China. No systematic assessment of the organization of the sex industry, including migration patterns has been conducted.

Preliminary situation assessments in several cities showed that young railway station and street prostitutes were most vulnerable to violence by clients and pimps and least able to negotiate safer sex. A substantial proportion of sex workers also appears to inject drugs. The specific situation of increasing numbers of street children, who are likely subject to multiple risks including sexual abuses and drug use, is unknown. Similarly, little is known about male sex workers, a small but particularly vulnerable group of the population. Except for one recently established outreach project in Odessa,

Ukraine and small scale projects in the Baltic States, no prevention programmes specifically targeting sex workers exist.

Rapid assessments of the potential for sexual transmission of HIV between men conducted in four countries in the region showed that although legislation which made homosexuality punishable has been repealed in several countries, hostile public attitudes persist, and same-sex is largely taking place in underground circuits structured around cruising areas, pick-up points in public parks, parking places, bus and railroad areas, bathhouses restaurants and discos. The assessments found a high prevalence of risk behaviour in terms of unsafe anal sex and multiple partners. The validity of available HIV data among homosexual men is limited, as many men are reluctant to disclose their orientation. MSM might therefore be underrepresented among STI patients and blood donors found HIV positive, for instance.

3. Migration and HIV

In some regions, migration is believed to contribute significantly to the spread of HIV. Several countries of Sub-Saharan Africa such as South Africa, Zimbabwe, Angola, and Uganda are cases in point. While only a few studies have provided reliable data on the specific factors that facilitate transmission of HIV in the context of migration, the focus of research was, and continues to be on certain highly mobile populations such as truck drivers and itinerant traders. The role of migration in the spread of HIV therefore remains largely unknown, and as a result HIV/AIDS prevention and care programmes are largely deficient in this area. Several previous MAP reports have included region-specific discussions of this issue.

A migrant can be defined as someone who changes residence voluntarily, either permanently or temporarily, across a geographical or political boundary. This definition does not include refugees, internally displaced persons, and (international) tourists, particularly sex tourists--a group that may also be contributing to the spread of HIV in many areas of the world. Using the more restrictive definition of migrant, it is estimated that in 1996 there were 2 to 4 million international migrants in the world, and 16 million internal migrants (who move within a country).

Migrants are often subject to HIV testing, which is used by many States as a criterion for exclusion or expulsion. Much attention has been given to the likelihood of migrants becoming a burden on the health and social services of receiving countries. In contrast, little effort has been made by governments toward the responsible collection of data to ensure proper attention to the health needs of migrants.

Global patterns of migration

The past 10 years have seen rapid growth of urban populations in Africa as a consequence of rural-to-urban migration. Many migrants are unaccompanied young men seeking seasonal work. For example, there are currently about 350 thousand people employed in the gold mines in South Africa. Approximately 95 percent are internal migrants. While few data are available on HIV rates in these populations, there is evidence of high levels of STIs.

In most of Asia, travel between countries has been facilitated by new highways, increased trade, and tourism. Labour-driven migration, high population mobility and the possible interaction of international tourism with the sex industry has been associated with the spread of STIs and HIV in, for example, Thailand and neighbouring countries.

Most migration in South America is economically motivated, while a combination of economic migration and civil unrest has been of prime importance in Central America. For example, in both Mexico and Central America, migrants tend to flow northward, often moving toward the United States. In Mexico, 25 percent of cases of HIV infection are rural workers with a history of temporary

migration to the United States. In the Caribbean, the risk of HIV spread may be more attributable to international tourism than to long-term migration.

Historically, both documented and undocumented migration have been characteristic of population movements in North America. It is therefore of particular concern that the United States has maintained and enforced an HIV testing policy for migrants in the absence of evidence that this is effective for the protection of public health.

In Europe, Eastern Europe and the Commonwealth of Independent States (CIS), economic migration, wars and the opening of internal and external borders have lead to increased population mobility both within and between countries. The break-up of the USSR and the formation of independent states in the early 1990s have created a shift in migration patterns, with many CIS migrants emigrating to non-CIS countries. The degree to which this will result in the movement of HIV within these populations is still unknown.

HIV can potentially have a devastating social and economic effect on the lives of migrant communities. While HIV and STIs are only part of the larger health challenges facing migrants and refugees, policies should be developed at the national and international levels to ensure that social and health services for migrants include components aimed at reducing the spread of STIs and HIV.

Refugees and internally displaced persons

Refugees are those who have fled their countries because of a well-founded fear of persecution for reasons of race, religion, nationality, political opinion, or membership in a particular social group, and who cannot or do not want to return. Internally displaced persons are those who have fled their homes, but remain within the borders of their own nation. It is estimated that globally in 1996, there were 22 million refugees and 30 million internally displaced persons.

The United Nations High Commissioner for Refugees (UNHCR) has estimated, for example, that there were approximately 1.3 million refugees from and in eastern African countries in 1997. These populations tend to be heavily concentrated in rural camps and holding areas. In addition, between 1989 and 1996 there were more than 900 thousand refugees, 1.1 million internally displaced persons, and 4.2 million repatriates in the Commonwealth of Independent States. The vulnerability of these populations to becoming infected with HIV is high, yet few interventions to date have focused on preventing the spread of HIV among them. HIV remains low on the list of international priorities considered relevant to responding to large flows of refugees, particularly in the early, acute stages of a crisis. However, UNAIDS has produced current Best Practice guidelines which include refugee-specific recommendations.

Currently there are few effective HIV prevention efforts for refugees and displaced persons due to such factors as: inadequate STI treatment, lack of information and education, lack of access to HIV screening, inadequate access to condoms, unscreened blood transfusions, lack of sterile injection equipment, and inadequate diagnostic facilities.

Surveillance and research gaps

There is a lack of adequate surveillance data on the specific relation between migration and HIV. The inclusion of migration status and ethnicity in national level surveillance systems has traditionally been precluded in fear of stigmatisation. However, where this barrier has been overcome, active participation of migrant communities has stimulated the design and implementation of effective intervention programs. Insufficient attention has been given to the impact of gender and age differences on the risk of HIV infection for migrants, refugees, and internally displaced persons.

Data collection and analysis should help shape prevention and care programmes relevant to migrants, refugees, and internally displaced persons with attention to the differences in needs when targeted at

different stages of the migration process (e.g., at the point of origin, transit, destination, and again for communities of origin in the case of return).

Recognition must be given to the heightened vulnerability of migrants in the process of data collection and analysis, and every effort must be given to ensuring that the human rights of migrants are adequately protected in this process.

4. Inequities in Care and Support for Those Infected With and Affected by HIV

As HIV/AIDS continues to spread unabated in most developing regions of the world, one of the most profound challenges manifested in this pandemic is how to care for the millions of people infected with and affected by the virus. The lack of options for care is further complicated by the lack of a dynamic response in most professionals toward realizing the provision of holistic care, including medical treatment, psychosocial support services and linkages between the clinical and home-care settings across the care continuum. The time when individuals infected with HIV, no matter where they live, are able to rest assured that while they face chronic and possibly terminal illness, they will have access to fully knowledgeable, adequate and sustainable treatment and other forms of care over the potential long-term is not yet in sight.

Daunted by the lack of resources and other structural impediments to organized care-for HIV, many in positions of power still shy away from the topic of care. The increase in the number of people in need of care globally, the limited coping capacity of health services, and the recognition that care needs go well beyond clinical therapies to psychosocial support and community-based care for the burgeoning populations of the HIV/AIDS-infected, especially in sub-Saharan Africa, can and do frighten some donors and governments.

Yet the right to health is a basic human right. HIV-positive individuals must be able to receive a full-spectrum of care. While rights do not lose their importance in low-resource settings, the reality is that they often are not fully protected. The mandate to protect health, to improve health, to care for those in ill health is a growing dilemma around the world, especially where masses of people are infected with or affected by HIV.

Medical, nursing and social support personnel in many countries, already stressed by the burden of other common, chronic diseases of public health that are difficult to care for, are frightened by confronting HIV/AIDS. Woefully inadequate services compounded by the fear of infection arm these workers with judgmental attitudes, moral impunity, and lack of caring behaviours. The obvious result is poor medical care for those with diagnosed or suspected HIV infection; consequently, comprehensive holistic treatment in these settings is not offered. In some countries, especially in east and southern Africa, the problem is exacerbated by the high percentage of health care providers in urban areas living with HIV themselves, leading to an extremely high proportion of patients per health care worker in clinic and hospital settings.

Knowing of the problems encountered in hospitals, many, if not most, known or self-suspected HIV-positive individuals frequently turn to health care providers only in the terminal stage of their illness. Others choose to never attend these clinics at all. By not availing themselves of voluntary counseling and testing at an early entry point, preventive therapies, or not being given access to these services, many find themselves unable to resist other opportunistic infections. The result: overflowing hospitals, some with 60 percent of their beds in medical wards accommodating the HIV-infected or terminally ill AIDS patients. Complicating the situation further is the lack of standardized HIV/AIDS treatment and management protocols, safety precautions, safe blood, and often other medical supplies. Limited or complete lack of counseling services and in many cases lack of confidentiality provides patients with few, if any, positive psychological or emotional benefits of clinic visits. Many patients,

especially women and in particular adolescent girls, can fear stigmatization and community ostracization from such a lack of confidentiality and, as a result, do not come forward for HIV testing or care.

Already bearing the burden of socioeconomic and political inequality, women who are HIV-positive may have less access to health care and psychosocial services than men. They also have less free time to access what is available and less expendable income to devote to their own comprehensive health care. Due to their low social status, lesser educational background, and generally lower level of self-esteem, many women cannot practice health-seeking behaviour, or are simply unaware of their potential for HIV infection. Frequently, their families and communities expect them to put the care needs of their spouses and children ahead of their own. Attitudes toward HIV-positive women can be especially discriminatory, even violent, with domestic violence not uncommon. When it comes to HIV care and support, the lack of access to such services for women may shorten their lives and tends to diminish the overall productivity of the community. However, there is a need for more data on these topics for more responsive policy formulation and better programmatic planning.

As well as care and support barriers to women, adolescents are ill-positioned for care and psychosocial support, especially if they are HIV-positive. At the time of their lives when they most need the support of parents, peer groups and in some cases medical care and psychosocial support from professionals, their concerns, which may relate to their future survival, may not be taken seriously. Adolescent girls, who are generally at the height of human emotional vulnerability, are in the worst societal position and can be ridiculed for asking the type of questions, which if answered comprehensively, can save their lives. In Nepal, where more than 200,000 girls are estimated to have been trafficked to India for sex work in brothels, a growing number are returning to their home villages HIV-positive. In many of the rural areas of the country, health care is scarce; to get any treatment at all, the girls need familial support, which can in itself be impossible to access when care needs are related to infection with HIV.

Underreporting of AIDS cases as well as HIV infections by health administrators is a large hurdle that seriously reduces the necessary basis for realistic design and planning of health care structures, staff and basic support systems. Caseload numbers are needed for costs to be estimated accurately, showing the benefits for all of holistic, community-based programmes linked to hospital care. For this effort to work, the voluntary diagnoses, and the provision of treatments, other forms of care and support for all who are HIV-positive, including the most marginalized segments of society, such as drug users, need to be respected equally with those for individuals whose social acceptability is unquestioned. If access to care and support is measured, a real picture of the HIV situational status will emerge relative to local environments, which are suitable for associating real costs. With the emergence of powerful but complex regimens and also the evidence of feasible and affordable preventive therapies and opportunistic infection prevention, the chance to introduce holistic therapies through clinical attendance is increasing. All communities need to recognize that antiretroviral therapies, available to all groups in some industrialized and middle income countries, are extremely expensive and not a panacea. Adherence to the complicated regimens is a universal problem. The short-term side-effects of many of these regimens are just starting to become known, and the long-term effects are completely unknown. Additionally, some populations are finding it difficult to return to lives they thought they had lost; their need for psychological support during this period has grown, not lessened. More data are needed to track the positive and negative aspects of these therapies, as well as the estimated all-inclusive, long-term costs.

The flowering of some care and support programmes in non-industrialized countries proves that, with courage, communities can create programmes to provide safety nets to those with HIV/AIDS even in the most dire economic settings. Linkages of hospital and community-based HIV/AIDS care and support need examination, wide dissemination of pertinent information and replication internationally. Linking clinical, community- and home-based programmes by taking a participatory approach to HIV/AIDS care and support options will facilitate the betterment of both and, likewise,

provide the type of caring and sharing that needs to be borne by and balanced among community networks at this time when individuals and families are increasingly unable to bear the burden of HIV/AIDS alone. Both access to and the quality of HIV care and support services need to be measured and monitored to ensure overall adequacy and sustainability, however comprehensive the response.

5. Mother to Child HIV Transmission: The Potential Global Impact

In 1998, approximately 600,000 children will be born with HIV infection worldwide. Unfortunately, the biomedical advance demonstrating the dramatic reduction of mother-to-child transmission of HIV with zidovudine (ZDV) treatment has yet to be translated into widespread use of antiviral treatment to help prevent HIV infection in infants. The 1994 ACTG 076 clinical trial follow up now shows a greater than 80% reduction in the vertical transmission rate of HIV, but this complex regimen may cost between $800-900 per woman treated, even without including other required costs of the regimen, such as voluntary counseling and testing (VCT) for HIV of the pregnant woman or formula feeding rather than breast-feeding for the infant. Primarily because of the ACTG 076 regimen's high cost and impractical logistics for resource-poor settings, where the vast majority of mother to child HIV transmission occurs, other options are also being pursued.

Types of intervention

Transmission of HIV from an infected woman to her offspring could be prevented in a number of ways. For many reasons, the best way to prevent transmission would be through primary prevention, that is either prevent the mother-to-be from becoming infected with HIV or prevent unwanted pregnancies in HIV infected women through contraception. In addition to primary prevention, other types of potential interventions could be considered on a population basis, that is, without the need to know a particular woman's HIV status, which would require the training, infrastructure and expense of VCT programs. Potential population based interventions could relate to those changes in obstetrical care that could minimize delivery factors which have been known to increase the likelihood of HIV, e.g. minimize time after rupture of membranes.

At least two other specific types of interventions are being tested in resource-poor settings that, if successful, may not require the knowledge of the pregnant woman's HIV status. One type of intervention is vaginal or birth canal cleansing with chlorhexidine to reduce HIV transmission at or around the time of birth. This intervention has been tested in Malawi without success in relation to reducing transmission, but another trial is underway in Kenya presently. In a second type of intervention, micronutrient supplementation is given to the pregnant woman to attempt a reduction in the rate of HIV transmission. These intervention trials are primarily based on the previously observed association between maternal Vitamin A deficiency and the increased likelihood of HIV perinatal transmission. The results of these trials in at least four trials in African countries are not yet available.

Both passive and active immunization with HIV specific reagents are being tested in sites in North America, Europe the Caribbean and Africa. If active immunization to either the pregnant woman or the infant proved to be effective, this could be a cost-effective approach to preventing mother to child transmission. Unfortunately the results also are not available from these initial trials and further research into this approach is needed.

Antiviral intervention

As noted, at least a three-quarters reduction in vertical transmission is possible with ZDV therapy, albeit with the complicated and expensive ACTG 076 regimen. Trials with other antiviral agents as well as multidrug trials are underway, but the costs and complexity of implementation may only increase as more antiviral agents are added.

A recent trial in Thailand looked at the contribution of oral ZDV given during the latter part of pregnancy and during delivery to the mother only. Results from the trial showed that this much cheaper and shorter course of ZDV could reduce the transmission rate from mother to infant by 50% (when given with formula feeding in the postnatal period). This important trial, unfortunately, did not achieve the reduction of transmission seen in the ACTG 076 trial and left open, therefore, at least two important questions: Would ZDV given either to the pregnant woman earlier in pregnancy and/or to the newborn after delivery reduce the transmission rate closer to that seen in the ACTG 076 regimen? A second trial in Thailand is in progress to help answer those questions by giving oral ZDV in two different dosing durations to a cohort of pregnant women, in addition to two different dosing duration of oral ZDV to the infants born to those mothers. Since we now know that oral ZDV is effective in this setting, this second trial will help determine the most effective oral regimen to further reduce transmission during pregnancy, delivery and during the immediate postnatal period. More research into other antiviral regimens to block transmission is a priority.

HIV and infant feeding

Unanswered are the issues and questions concerning preventing transmission of HIV by breast-feeding. Rough estimates of a 10-14% additional risk of transmission via breast-feeding have been given when various observational studies and estimates have been combined. This added risk when compared to the 25-35% known risk of HIV transmission during pregnancy and delivery means that perhaps a quarter to a third of all the HIV infections in infants worldwide occur via breast-feeding. As success in reducing mother to infant transmission progresses, the dilemma of postnatal transmission of HIV being balanced with optimal postnatal feeding and care will only increase. With any policy decisions concerning breast feeding versus any other form of infant nutrition are considered, the importance of collecting local data cannot be overemphasized, in that the risks, affordability, nutritional quality and logistics of alternative forms of infant feeding (e.g. formula feeding) are not constant, nor uniform throughout specific regions of the world. In addition, not only are the costs and risks of alternative infant feeding high, this type of feeding may also be associated with social stigma. Urgent research is needed, therefore, to determine how to reduce HIV transmission via breast milk, in addition to determining safer ways to provide nutrition to infants.

An agenda for action

Translating the advances in preventing mother to child transmission into practice demonstrates the difficulty of translating clinical research findings into public health reality. This year UNAIDS and especially two of its cosponsoring agencies, WHO and UNICEF, have developed several guidelines and overview documents for use in the area of preventing mother to child transmission of HIV and in the area of HIV and infant feeding. These documents are the result of much work and expert opinion concerning how healthcare decision-makers and managers could proceed with the opportunities now available. These documents are recommended as important blueprints for proceeding.

Concerning the future trends of the epidemic in light of the recent advances in preventing mother to child transmission, one must look at the positive and potentially negative outcomes of proposed interventions, including parameters as infant morbidity and mortality, costs, breast feeding rates, adherence rates, as well as the HIV specific outcomes, including transmission rates, the impact of new maternal HIV infection diagnoses and the development of drug resistance. To implement the new regimens and programmes now being recommended by UN agencies, therefore, it is recommended that demonstration projects be created in a variety of epidemiological and economic settings, within which such necessary operational research could then be conducted. Only in planned data gathering during the implementation of new prevention interventions, can the hope of blocking mother to child transmission be realized in a sustainable and feasible manner.

6. HIV Transmission in the Health Care Setting

HIV and other blood borne infections such as Hepatitis B and C and HTLV I are transmitted in the health care setting

- To patients through transfusion of infected blood or injections or cuts with inadequately sterilised equipment.
- To health care workers through percutaneous injuries with infected needles or other sharp instruments or through exposure of mucous membranes or breached skin to body fluids of infected patients.

Transmission of HIV infection from infected health care workers to patients has been documented in a few instances only.

The contribution of these modes of transmission to the spread of HIV in the general population is generally very limited and as a result prevention of these infections in low resource settings has received little attention. Yet, it has been estimated that in Uganda 5 to 10% of HIV infections were attributable to transfusion of infected blood. Also, at a population level HIV transmission in the health care setting may be a small problem, but for certain subpopulations, i.e. users of health services and health care workers, the risks of transmission may be far from negligible.

HIV transmission through blood transfusion

In the US and in Western Europe the risk of infection through blood transfusion is now extremely low, in the range of 1 in every 440.00 to 1 in every 660.000 donations. Although considerable progress has been made in developing countries since the late 1980's, provision of safe blood is still not universal nor consistent. For example a study carried out in Kenya estimated the risk of HIV infection after blood transfusion at 1 in every 50 donations, although nearly 100% of blood bags were reported to have been screened for HIV.

Several strategies for the provision of safe blood have been proven to be effective in reducing the risk of transmission of HIV and other infections, i.e. hepatitis B and C and HTLV-I. Strategies, which include avoidance of unnecessary transfusions, recruitment of low risk donors and screening for HIV and hepatitis B, have been shown to be feasible and cost-effective even in low resource settings. However consistent implementation of these measures remains problematic in many areas of the world, the ultimate reason for this failure being the low priority given by policy makers and donor agencies to prevention of infections through blood transfusion.

HIV transmission through injections and cuts with inadequately sterilized equipment

There have been several reports in the literature on HIV transmission through inadequately sterilized equipment. The most widely publicized outbreaks have occurred in Rumania and in Russia in the late 1980's but other outbreaks have occurred in various parts of China due to the reuse of plasmapheresis equipment. The data on this mode of transmission are virtually non existent for developing countries. Yet, the circumstances that led to the outbreak in Russia, i.e. re-utilization of disposable injection material, are prevalent in many resource poor settings. Failure to detect infections - or even outbreaks - acquired through inadequately sterilized equipment, can be attributed to poor monitoring systems (or even lack of monitoring systems) and low awareness of the problem.

Occupational HIV transmission

In industrialized countries the reported numbers of health workers infected through this mode of transmission are very small compared to the numbers of HIV infections in other transmission categories. For instance, by June 1996, U.S Center for Disease Control had reported only 51 documented cases and 108 possible cases of occupationally acquired HIV infection.

As for developing countries, a few studies have attempted to document the risk of occupational exposure by comparing HIV prevalence rates in different categories of health services employees.

These studies did not find a significantly increased risk of HIV infection associated with patient contact, suggesting that the proportion of HIV positive health care workers who acquired their infection through occupational exposure is rather small. However this does not mean that the risk of occupationally acquired HIV infection is negligible. A study in Tanzania estimated this risk among health care workers in district hospitals, at 0.27% per year. In the same region, in the same year the incidence of HIV infection in the general population was 0.95%.

In resource poor settings, especially settings with a severe HIV/AIDS epidemic, the risk of occupationally acquired HIV infection can be expected to be several factors higher than in industrialized countries. Prevalence rates of HIV infection among hospitalized patients of over 20%, which was the rate used in the Tanzanian study, are not at all exceptional in hospitals in sub-Saharan Africa. The study in Tanzania also brought out an extremely high incidence of percutaneous injuries, i.e. 5 per health care worker per year.

Failure to ensure safe working conditions for health providers in developing countries is part of a general pattern of failure to address the welfare of people working in health services. Renumeration of health workers is generally low and investments in safety precautions assume low priority where resources for health are scarce. Yet, health care workers, especially in settings with severe HIV/AIDS epidemics, are a valuable asset and their anxieties and frustrations may have a negative impact on the quality of patient care.

A call for urgent action

HIV transmission in health services in developing countries is a neglected problem. Interventions to prevent these infections will not have a measurable impact on the spread of HIV in the general population, but they have to be considered part and parcel of the provision of quality care. Inequity in access to antiretroviral therapy is now – rightly – in the centre of heated debates. It is high time we also address the issue of inequity in the prevention of HIV infection in health care settings. If not, we may soon face absurd situations where we provide expensive treatments to increasing number of people who acquire HIV infection through the health care setting because of our inability to ensure a safe blood supply or provide adequate universal precautions.

What needs to be done? First of all we need more and better data on blood safety, patient-to-patient transmission and occupational exposure. It may not always be feasible to set up sophisticated systems for surveillance of infections acquired through these transmission routes, but systems for the monitoring of procedures ought to be within the reach of most health services. Monitoring morbidity and mortality among health care workers should be quite straightforward and affordable, even in resource poor settings.

With regards to blood transfusion safety we basically know what needs to be done but policy makers and donor agencies need to be convinced of the necessity to allocate resources for the provision of safe blood on a consistent basis. Prevention of HIV transmission to health care personnel, whether through sex or occupational exposure should be part of a comprehensive prevention strategy. Other pressing problems in the health care setting include transmission of hepatitis B and C, both of which are preventable by improved universal precautions and a safe blood supply.

HIV infection through occupational exposure: How big is the problem?

The average risk of HIV infection to a health care worker after percutaneous exposure to HIV is estimated at 0.3% (compared to a 0.1% probability of male-to-female transmission during sexual intercourse). Risk factors associated with an increased risk of transmission include injury with a large bore needle; deep injury; visible blood on the device; a procedure involving a needle in an artery or vein; advanced disease in the source patient.

Data on numbers of health care workers infected through occupational exposure are available for a number of industrialised countries

> *US: By June 1996 CDC had reports of 51 documented cases and 108 possible cases of HIV infection after occupational exposure.*
>
> *France: By early 1995 there were 10 proven cases and 27 possible cases reported.*

There are no hard data on numbers of health care workers infected through occupational exposure in developing countries.

> *A study in nine hospitals in Mwanza Region, Tanzania, found an average of 9.5% prick incidents per week. This gave an incidence of 5 prick accidents per year per health care worker. With an estimated HIV prevalence among patients of 20% and a transmission probability of 0.25% this would give an incidence of HIV infection through occupational exposure of 0.27% per year.*
> *Around the time this study was conducted the incidence of HIV infection in the general adult population was 0.95% in the rural areas and 1.2% in Mwanza town.*
>
> *In areas in Sub-Saharan Africa, where up to 50% of hospital beds are occupied by HIV/AIDS patients, the risk of infection through occupational exposure may be much higher than reported in this study.*
>
> *In comparison, a study in 6 hospital emergency departments in the U.S. found an incidence of 0.37% percutaneous injury per person per year and an annual risk of occupational HIV infection of .002-8.9%.*

Although no direct measures are available of the magnitude of the problem of HIV infection through occupational exposure in developing countries, the few estimates that are available give reason for concern. The study in Tanzania showed a worrying high incidence of percutaneous injury. This was explained by insufficient staff training, inadequate equipment, and poor waste disposal - a situation that may be found in most resource-poor settings.

7. Orphans

It is generally accepted that children born to HIV-infected mothers have about a 33 percent chance of being infected through maternal transmission. This means that two-thirds will not be infected. However given that the incubation period is approximately 6-8 years, those children not infected will be orphaned. Orphans continue to be considered orphans until they reach the age of 15. The importance of orphaning resulting from the epidemic has not been fully appreciated nor planned for, although there has been some consideration of this in certain countries and from certain agencies.

The MAP meeting reviewed the state of knowledge regarding orphans and examined alternative estimates on the numbers of orphans and likely future trends. A number of critical issues are at work which emphasise the importance of this issue. The number of orphans resulting from AIDS mortality is large and is expected to increase rapidly in the near future. UNAIDS estimates that already over 8 million children have lost their mother due to AIDS. As the peak in the incidence of orphaning will occur only once the peak in AIDS cases is past, the orphan issue is bound to be a long-term one, requiring increased attention and long-term solutions.

Furthermore, most analyses have not addressed the fact that estimates of the number of orphans due to AIDS are **in addition** to the number due to non-AIDS causes. This means that whatever the magnitude of orphans due to AIDS, the real problem will be much greater. In addition, due to technical difficulties, most analyses have only estimated the number of children whose mother has died. Some research has shown that the total number of orphans may be two to three times the number of maternal orphans.

Orphanhood impacts on children in a variety of ways. The following areas were discussed:

- Loss of family and identity;
- Psychosocial distress;
- Increased malnutrition;
- Loss of health care, including immunisation;
- Increased demands for labour;
- Fewer opportunities for schooling and education;
- Loss of inheritance;
- Forced migration;
- Homelessness, vagrancy, starvation, crime;
- Exposure to HIV infection;
- Exploitation and exposure to violence; and
- Gender differentials in impact.

Based on recent estimation efforts, the number of orphans created by current epidemics is reasonably well known. What is not known are the age patterns, gender differences, or the situation of these orphans in the households and communities in which they live.

The numbers of orphans in countries with severe HIV/AIDS epidemics is already straining the ability of extended families and communities to absorb and provide for these children's needs. It is unclear how much coping can be expected of families and communities. How much of the inevitable gap in support will be taken up by the state? And what can civil society, with the support of government and the international community, do to help? These are questions that must be faced in the next decade, and there are no easy answers.

In the countries of Eastern Europe and the CIS the numbers of AIDS cases and hence orphans may be small in absolute numbers, but may represent a significant increase in percentage terms. In addition, the effects may be exacerbated in this region, where there is a history of relying on the state for support, while the current state system is contracting and its capacity to provide care decreasing. Some examples of innovative community response include selected programmes in Uganda, the Child-Headed Household programme in Zimbabwe, and programmes in Zambia. Despite these examples of effective programs, none has been replicated even nation-wide, nor has there been any attempt to document "best practices" for global application.

Directions for action

There is an urgent need for information of what has worked and what has not in terms of care and support for affected children in diverse cultural settings. Best practices need to be identified for use by communities and programme planners.

Additional research on the circumstances of orphans must be undertaken, including studies of their characteristics and circumstances and the differential impact of maternal, paternal, and double orphaning.

Policy makers should ensure policies and programmes address the different needs of girls and boys as well as adolescents versus younger children.

Governments and communities should incorporate the care and support offered by traditional institutions (religious, social and grassroots) into their overall programme planning.

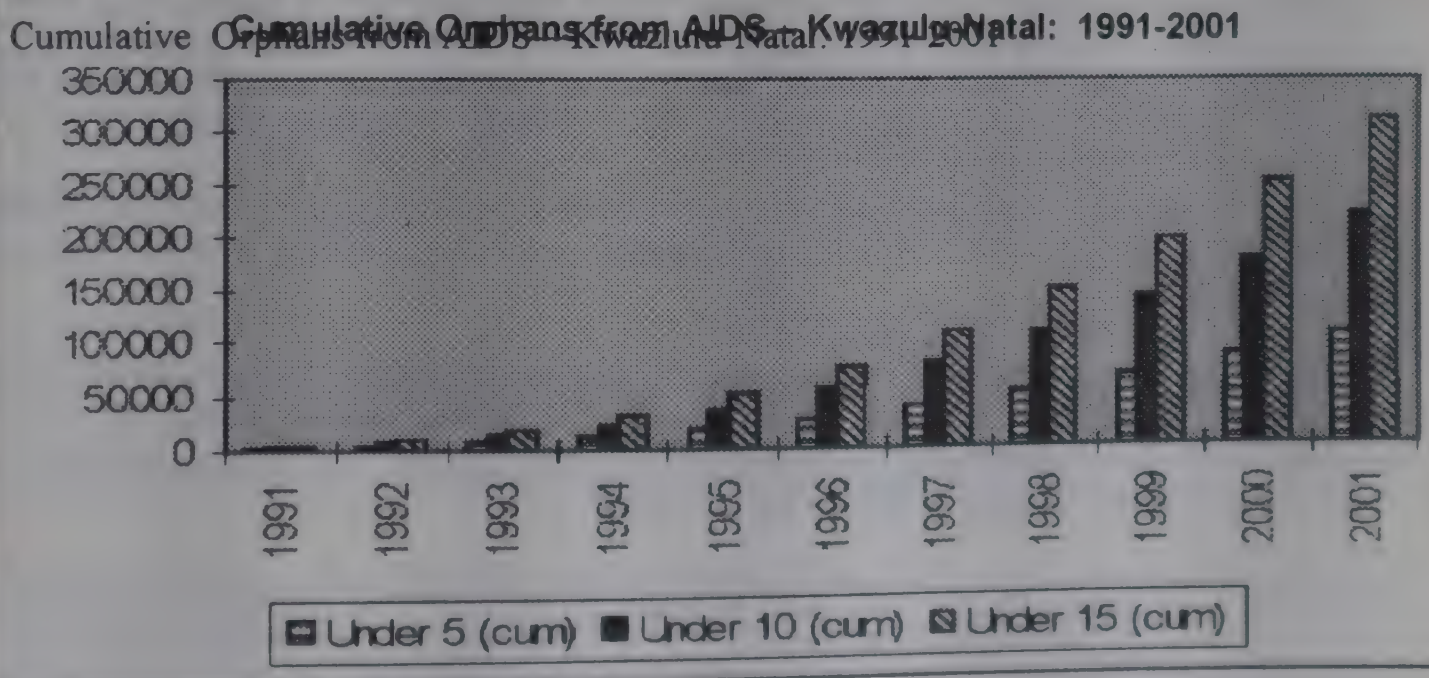
Finally, all those involved need to recognise the right of children's voices to be heard, considered and given due weight in determining their care and support needs.

Orphans: A Looming Crisis

Already more than eight million children have been orphaned by AIDS in sub-Saharan Africa. It is projected there will be three million orphans in South Africa in the next 10 years. This issue was the focus of the *Raising the Orphan Generation Conference"* held in June 1998 in Pietermaritzburg.

In this conference, a number of orphan estimates were presented. The reported number of orphaned children under 18 years of age in Tanzania was 6 percent in 1991 and 26 percent in the Rakai district in Uganda. In Manicaland Province of Zimbabwe, 6.4 percent of children under 14 years of age had been orphaned by 1991, and in Zambia, 17 percent of children under 16 had lost their mother by 1996. A 1994 survey in the KwaZulu-Natal Midlands region in South Africa showed that 6 percent of children under 16 had lost their mother (due to various causes, including AIDS).

The Children in Distress Project has prepared estimated numbers of orphans through 2001 in Kwazulu-Natal. The numbers, shown below, indicate 150 thousand cumulative orphans in 1998 and over 300 thousand by 2001 (Source: CINDI Website).



It is clear that AIDS will continue to orphan many thousands of children in KwaZulu-Natal. The state, the society, and the community are in no way prepared for the care and support which will need to be extended to these children. AZT treatment will reduce the number of paediatric AIDS cases, at an estimated cost of dollars 380 per patient, but will also serve to increase the number of orphans.

8. Interactions Between TB and HIV programmes

From 30 to 70 percent of young adults in developing countries are infected with *Mycobacterium tuberculosis*, most of whom will not develop disease. HIV infection is the single strongest risk factor for progression from primary as well as latent infection to active disease, so that in areas of the developing world that have a high prevalence of HIV infection, rates of TB are rising. Of the 15.3 million people estimated to be infected with HIV and *M. tuberculosis* at the end of 1997, 11.7 million (76 percent) live in sub-Saharan Africa. An estimated 7.4 million TB cases have occurred in 1996. Three countries, India, China, and Indonesia, account for half of the annual world total of TB. WHO has refined and promoted a strategy for TB control, the DOTS (Directly Observed Therapy – Short Course) strategy, which is more likely than other approaches to result in high rates of cure and avoidance of drug resistance.

Although patients with HIV-associated TB mostly have typical clinical patterns, their frequency of atypical manifestations is increased, making diagnosis more difficult. Recurrence rates may be higher than in HIV-negative persons through relapse or reinfection. Drug resistant TB has been associated with HIV, particularly in the U.S.A., where HIV-associated TB may occur in the context of other factors that decrease access to health care such as intravenous drug use and migration. Drug reactions, particularly skin eruptions, are more common in People Living With HIV/AIDS (PLWHA), notably to thiacetazone, which may lead to life threatening reactions. *M. tuberculosis* also enhances the replication of HIV, leading to higher viral levels and possibly to more rapid progression of HIV disease in PLWH who develop TB compared to those who do not. The following are the main impacts of HIV on TB control programmes:

Increased Burden: From 5 to 10 percent of dually infected adults will develop TB each year. If HIV seroprevalence rises as high as 10 percent of the adult population, 100 to 200 new cases of HIV-related TB can be expected per 100,000 total population. In most countries, this will represent at least a twofold increase in numbers of cases, with urban areas being most heavily impacted.

Diagnosis: In addition to the effect that the increased burden has on diagnosis, it is also more difficult to diagnose individual cases. Furthermore, HIV causes several other pulmonary problems that may be misdiagnosed as TB.

Treatment: The advent of highly active anti-retroviral therapy (HAART) may cause problems of drug interactions in the few who are able to afford this treatment; the protease inhibitors are contra-indicated while taking rifampicin. TB programmes are increasingly faced by patients with other medical problems associated with HIV in addition to TB.

Mortality and morbidity: Even in programmes that use the DOTS strategy, mortality in HIV-positive patients is high, mostly from other manifestations of HIV disease. This leads both to loss of the community's confidence in the programme as well as to deterioration in staff morale. Adherence to therapy and follow-up may be threatened by other medical and social problems affecting HIV-infected patients.

Stigma. The association of TB with HIV is widely recognized in communities bearing the brunt of the dual epidemic and HIV remains a highly stigmatizing infection. Some patients may choose not to attend health facilities through fear of being diagnosed with TB and by association with HIV. Misconceptions about TB and HIV also lead to some health care workers worrying about the risk of acquiring HIV from their patients. Other staff may discriminate against TB patients, perceiving them to be less deserving of care through association with HIV infection.

Nosocomial and institutional transmission: The high HIV seroprevalence among patients facilitates the spread of TB. As the HIV prevalence rises in the general population, institutional transmission also becomes a serious concern for those working in health care facilities or living in crowded surroundings in other institutions such as prisons, mines or barracks.

In summary, HIV has adversely affected TB control programmes both directly through increases in caseloads and more difficult diagnosis, but also indirectly through its effect on health-seeking behaviour and the interaction between patient and provider at the health services. The control of TB in areas with a high prevalence of HIV infection is therefore, to a considerable degree, dependant on the success of the HIV control programme.

Impact of TB on HIV control programmes

Since TB is one of the most common complications of HIV infection and is eminently treatable, accurate diagnosis and effective treatment of TB should be two of the most important components of any HIV care program. As prophylaxis against opportunistic infections becomes more widely sought by HIV-infected persons in developing countries, preventive therapy for tuberculosis in HIV-infected persons will become increasingly discussed. Although preventing TB in People Living with HIV/AIDS (PLWHA) who have not yet developed active TB has been demonstrated in clinical trials, there are operational challenges to ensure that patients with active TB are not given preventive therapy when they need full treatment. Failure to exclude active disease will result in inappropriate monotherapy and lead to the development of drug resistance. TB programmes have a well-developed strategy that is integrated into provincial and district hospitals and urban and rural health centers, and which ensures delivery of care to TB patients and monitors outcome. In contrast, strategies for care of patients with HIV-related illnesses are at an earlier stage of development in most developing countries.

TB patients are also an easily identified group that has a higher prevalence of HIV infection than the general population. They are, therefore, a suitable target for interventions to reduce further transmission of HIV, and, when possible, biomedical interventions to prevent or treat other HIV-associated problems. In summary, TB diagnosis and treatment are vital components of any HIV care program.

There are, therefore, considerable opportunities for synergy between TB and HIV programmes. The decentralization and increasing autonomy for districts that health sector reform is bringing to many countries should be used as an opportunity to enhance the concerted management of the dual epidemics. Possible actions include: training; community care; IEC manuals and guidelines; advocacy; surveillance; collaboration with NGOs; and social mobilization.

The potential synergy of TB and HIV programmes

Continuing expansion of the DOTS strategy is needed to control the global burden of TB. In areas of high HIV prevalence, the control of TB is, to a considerable degree, dependant on the success of the HIV control program. TB diagnosis and treatment should be vital components of the HIV care program, and HIV care must be included in TB programmes. It is also possible to prevent some cases of TB in PLWHA who have not yet developed active TB. Preventive therapy should be included in the package of care for PLWHA. Although both TB and HIV programmes are aware of the ongoing disaster, neither has taken sufficient action, largely because they are already stretched to the limit with priority activities for their specific infection. The challenge is to harness the capacity of both

programmes and their partners, the communities they serve and the NGOs involved, in order to minimize the impact of the dual epidemics. Health sector reform provides the opportunity to develop the synergies between TH and HIV activities in the delivery of services. The monitoring of the TB and HIV epidemics, combined with the monitoring of the interaction between TB and HIV programmes will show the degree to which the synergy between these two public health problems offsets—or is dominated by—the synergy between the programme aimed at controlling them.

9. The Global Map of Neglected Behaviours: Knowledge and Action Gaps

As the 21st century approaches, we are discovering that the global HIV pandemic is far worse than we had thought. Furthermore, as the growth of the HIV pandemic is outpacing the mobilization of resources, prevention efforts must become more focused, more inclusive of the full spectrum of those with risk behaviour, and more efficient and effective.

This requires good behavioural information, so that resources can be directed where they will have the greatest impact and the more effective prevention alternatives chosen. Our knowledge of risk behaviours for HIV still has severe limitations in most of the countries in the world. This leaves serious questions about how to most effectively target, focus, and evaluate the responses, how to mobilise resources and efficiently use the resources that are available, and how to build political commitment.

Major knowledge gaps in targeting and focusing the responses

HIV epidemics are complex in any country. They often consist of large numbers of sub-epidemics in different populations tied together through complex behavioural networks. An effective national programme must understand this complexity and develop appropriately complex solutions. Effective strategic planning for prevention creates demands for behavioural data, including consideration of the extent of risk in populations as a whole, as well as the respective size of various populations particularly vulnerable to HIV.

The levels and forms of risk behaviour must be assessed in order to understand the potential impact of widespread HIV transmission, monitor large-scale changes in behaviour, and determine the magnitude of ongoing prevention needs. The primary method for obtaining this type of population wide information has been through representative general population surveys. However, despite many efforts, including the Global Programme on AIDS Partner Relations and KABP surveys in 1989-1990 and recent sexual behaviour assessments in the Demographic and Health Surveys, knowledge of the extent of general risk behaviour remains poor in most countries. Only about 40 countries have general population surveys and few have looked at behaviour changes over time. When UNAIDS asked HIV/AIDS country programmes to provide information about the percentage of the population with non-regular partners and their condom use with those partners, less than one-third of the countries could provide information on either. Many factors contribute to the lack of behavioural data including cost; reluctance to conduct such surveys for political or religious reasons, lack of personnel or technical resources, and concerns about the reliability and validity of data that might be gathered. Using stratified sampling approaches to gather representative data, rather than insisting on a nationally representative sample, can provide a cost-effective and efficient alternative.

Without a complete picture of behavioural risk in a population it is difficult to prioritize prevention activities. Certain situations contribute disproportionately to HIV transmission, for example, sex work and injecting drug use. Yet few countries can provide estimates of the numbers of sex workers and clients or injecting drug users. Knowledge of important variations in risk behaviours within populations is rare, so prevention efforts are not necessarily focused on those with the greatest risk behaviour. Populations such as men having sex with men and sexually active youth may be missed

and other vulnerable groups such as factory workers, military, fisherman, and truckers are also likely to be overlooked.

What is happening with youth? In many countries it is still assumed that few youth are sexually active. Carefully collected behavioural data are required to demonstrate the need for prevention programmes among the young. Behavioural studies are also necessary to further demonstrate that sexual health education does not increase sexual activity. While many such studies have been carried out in industrialized countries, few have been done in developing countries to date.

Improving the local relevance and quality of behavioural data

Locally relevant behavioural information is the best source for designing locally effective prevention programmes. Communities know their own situations best, therefore behavioural research and monitoring must actively involve communities in critically evaluating their own risk situations and contributing to the design of effective programmes. This involvement is also essential for communities to mobilise themselves to respond to the epidemic, rather than waiting for outside entities to act. In places where vulnerable populations may be severely marginalized, separate advocacy, research, and prevention efforts might be needed to supplement community-planning processes.

Behavioural research instruments need to be relevant to their locality. For example, social constructions of sexuality and gender relations vary greatly from country to country and population to population. "International standard" questions may not reflect local categorizations of sexual partners, sexual behaviour, or gender relations and questions not phrased in a relevant and understandable fashion for the interviewee will produce unreliable and invalid data which may be inappropriate to local prevention programme design. Careful formative research is needed to determine the best way to ask questions in a local context. This means that international comparison questions might need to be supplemented by locally relevant questions that contribute to overall programme design, targeting, and evaluation.

Work is also needed on methodologies for improving the reliability and validity of behavioural data. Alternative approaches such as face-to-face interviews, tape recorder administered interviews, and computer based administration should be researched critically and the approach chosen which is most effective in the local setting.

Efficiently utilizing resources

As resources become more constrained, it is increasingly important to make efficient use of what limited resources are available. Our response will remain inefficient without a better understanding of what forms of prevention are most appropriate and effective with different population groups. Specific studies to compare the impact of different prevention programmes are needed in a local context, and most future behavioural and epidemiological studies are best done in the context of these programmes so that they contribute to not only knowledge of risk but to its reduction.

There is also a major gap in transferring existing knowledge on prevention between different places and into locally effective alternatives. Often we are aware of what constitutes effective prevention, but do not act on this knowledge. Approaches that we know facilitate HIV prevention, such as the development of supportive legal and social environments, are not put into practice. To do so calls for increased political will and commitment to HIV prevention. In addition, there is often insufficient sharing of behavioural and prevention experiences among developing countries, calling for an increase in the creation and support of technical resource networks and increased support for South-South collaboration.

Building political commitment and mobilizing resources

Countries that have had effective responses demonstrate that high level political commitment is essential to containing or avoiding a serious HIV problem. Unfortunately, in most countries pregnant women provide one of the few epidemiological windows on the general population, and research often focuses on specific populations assumed to carry high levels of risk. These populations are often discriminated against, so that mobilizing action for them can be politically difficult. Data must be presented carefully to avoid increasing stigmatisation and discrimination, but data on the behaviours of the population as a whole and a better understanding of the behavioural linkages among various populations can help convince policymakers and community members that HIV is a serious problem.

Policymakers and the public as a whole often operate on false assumptions about sexual and other risk behaviours in society. Discomfort with discussion of sexual issues and drugs keeps many relevant issues off the public agenda. The lack of data to contradict false assumptions also contributes to the neglect of prevention needs.

There is a tendency to oversimplify the nature of epidemics. Even in countries where the epidemic has been labelled "heterosexual", HIV transmission continues through other routes including needle sharing and sex between men. In many parts of the world, e.g., Africa and Asia, the focus on heterosexual transmission has become a barrier to looking at other forms of risk behaviour. The invisibility, illegality and stigmatization of men having sex with men and injecting drug use in many cultures contributes to this neglect. Consequently throughout much of the world, we have little solid behavioural information on changes in same-sex or needle-sharing behaviours over time. This lack of information becomes directly linked to a lack of targeted prevention programmes.

Reliable behavioural data can also help to make the importance of prevention clear and to demonstrate that prevention works. Often, however, the results of behavioural studies are not presented to policymakers and the public in a clear fashion. Policymakers should be made aware of behavioural research from the formulation stage in order to bring them into the process. Reports and recommendations resulting from behavioural data must be sensitive to the political and social constraints on policymakers' actions. Research on the policy development process itself could help to improve the efficiency with which findings are converted into action.

Lack of knowledge leads to lack of action or inappropriate action

Despite two decades of a global HIV pandemic, it is surprising how little we actually know about risk behaviours in most countries of the world. Even the simplest baseline data for evaluating widespread behaviour change in populations is often lacking. This makes it difficult to move forward and to convince people that what is being done makes a difference, especially when they see large numbers of people dying around them. A lack of accurate knowledge makes it difficult to mobilize responses, demonstrate the impact of programs, and ultimately provides one more excuse for not acting. It is essential that the necessary behavioural and epidemiological data are collected, that these data are analysed, and that the findings are understood and presented in a clear fashion. Continuing to neglect behaviours will foster continued neglect of prevention.

10. General Recommendations

- Combined epidemiological and behavioural research is needed to understand the most important factors contributing to variations in HIV prevalence and incidence between countries and populations, and to the rapid growth of HIV in some settings. Such understanding is essential to directing resources and mounting an early and effective response.

- Ensure that all behavioural research conducted contributes to altering policies, improving programs, or mobilizing further support for prevention and care. Establish clear links to action before any behavioural research or data collection is undertaken.

- Whenever possible, behavioural research should be conducted in the context of actual prevention and care programmes. However, the implementation of programmes should not be delayed until behavioural research is completed, but instead early action taken and the findings used to improve the programme as it proceeds.

- There is an urgent need to improve and expand behavioural assessment and surveillance to compliment other process, outcome and impact data on HIV/STD. This is essential information that will improve our capacity to monitor the trends of individual behaviours, changes in social norms and evaluate the impact of prevention efforts.

- The impact of the interaction between TB and HIV must be minimized. TB and HIV programmes must harness their capacity and the capacity of their partners and the communities which they serve in order to control the spread of these dual epidemics. The monitoring of the TB and HIV epidemics, combined with the monitoring of the interaction between TB and HIV programmes, will show the degree to which the synergy between these two public health problems offsets—or is dominated by—the synergy between the programmes aimed at controlling them.

- Data collection and analysis is needed to shape prevention and care programmes relevant to migrants, refugees and internally displaced persons. Sufficient attention must be given to the impact of gender and age differences, as well as differences in needs at different stages of the migration process.

- The number of orphans, especially those resulting from the AIDS death of the mother, is large and will continue to rise. We need to monitor the extent of care and support needs, with attention to the care and support currently being provided. Attention must be given to the documentation of best practices in community responses in different cultural settings in order to provide the best possible programmes for orphans worldwide.

- The contribution of HIV transmission in the health care setting to the spread of HIV in the general population is relatively low even in developing countries. However, for the subpopulation of health care workers in high prevalence settings, the risk of transmission may be significant. In order to reduce these infections, we need more and better data on blood safety, patient-to-patient transmission and occupational exposure. This information will enable programme managers to influence decision makers to allocate adequate resources.

- The growing needs for HIV/AIDS care and the ever-expanding array of therapies call for a focused attempt to collect and analyze data on care needs, demands, availability and use. As care is becoming strongly linked to prevention, there is a need to devise and implement monitoring systems that transcend prevention and care fields and show the degree of progress achieved in each of these fields.

11. List of Participants

Alix ADRIEN, *Canada*
Chris ARCHIBALD, *Canada* *
Laura ASTARLOA, *Argentina* *
Macauley Isaac BABILA, *Cameroon* *
Tim BROWN, *USA* **
Jean-Baptise BRUNET, *France* **
Anne BUVÉ, *Belgium* *
Carlos CACERES, *Peru* *
Bilali CAMARA, *Trinidad and Tobago* *
Michel CARAËL, *Switzerland* *
Euclides CASTILHO, *Brazil* *
Saulinus CHAPLINSKAS, *Lithuania* *
Hehe CHENG, *People's Republic of China* *
James CHIN, *USA* **
CHUNG A, *Vietnam*
DAO Quang Vinh, *Vietnam* *
Kevin DE COCK, *USA* *
Karl-Lorenz DEHNE, *Germany* *
Roger DETELS, *USA* *
Antonio C. GERBASE, *Switzerland* **
Peter GODFREY-FAUSSETT, *Switzerland*
Alexander GOLIUSSOV, *Russian Federation* *
Gail GOODRIDGE, *USA*
Sofia GRUSKIN, *USA* *
Françoise HAMERS, *France* *
Catherine HANKINS, *Canada* *
IRWANTO, *Indonesia* *
Rokiah ISMAIL, *Malaysia* *
John KALDOR, *Australia* **
Mitsuhiro KAMAKURA, *Japan* *
Lev KHODAKEVICH, *Switzerland* *
Yuri KOBYSHCHA, *Ukraine* *
Alexander KOSUKHIN, *Kazakstan* *
Ryuichi KOMATSU, *USA*
Veena LAKHUMALANI, *India* *
Peter LAMPTEY, *USA* ***
Su-su LIAO, *People's Republic of China* *
Richard MARLINK, *USA*
Roeland MONASCH, *Switzerland*
Lalit M. NATH, *India* *
Ibra NDOYE, *Senegal* *
NGUYEN TRAN HIEN, *Vietnam* *
Angus NICOLL, *UK* *
Mary O'GRADY, *USA* *
Vadim POKROVSKIY, *Russian Federation* *
Eric van PRAAG, *Switzerland*
Deborah RUGG, *USA* *
Swarup SARKAR, *Switzerland* *
Bernhard SCHWARTLÄNDER, *Switzerland***
Karen STANECKI DE LAY, *USA* **
Rand L. STONEBURNER, *Switzerland* *
Donald SUTHERLAND, *Canada* *
Daniel TARANTOLA, *USA* ***
Peter O. WAY, *USA* *
Neff WALKER, *Switzerland*
Jacqueline WEEKERS, *Switzerland*
Alan WHITESIDE, *South Africa* *
Taro YAMAMOTO, *Japan**
Tom ZHUWAU, *Zimbabwe* *

Secretariat:
Johanna Van Hise HEART
Elena MARKOVA
Carmen BUENCAMINO

*** MAP Member; ** MAP Steering Committee Member; *** MAP Co-Chair**

For details on how to contact participants, please refer to our web site or contact the MAP Secretariat.

14

MATERIAL ON HIV/AIDS

SENT BY

MEDICAL MISSION INSTITUTE

UNIT FOR HEALTH SERVICES AND HIV/AIDS

SALVATORSTR. 22

D-97074 WÜRZBURG

GERMANY

POSITIONS WITHIN THE CATHOLIC CHURCH REGARDING THE SUBJECT "PROTECTION AGAINST INFECTION IN THE CONTEXT OF HIV/AIDS"

A study by
Mattias Kiefer, Munich,

on behalf of
Medical Mission Institute,
Unit for Health Services and HIV/AIDS
Salvatorstr. 22, D 97074 Würzburg

SHORTENED VERSION der deutschen Studie:
"Positionen innerhalb der katholischen Kirche zum Thema "Infektionsschutz im Kontext von HIV/AIDS"
Translation by Unit for Health Services and HIV/AIDS

Introduction

Joy and hope, sorrow and fear of people today, in particular the poor and distressed of all kind, are also the joy and hope, sorrow and fear of Christ's followers. There is nothing truly human which would not find an echo in their hearts as their own community is formed by people, who, united in Christ, are lead by the Holy Spirit on their pilgrimage to the kingdom of the Father, and, who have received a message of salvation which has to be conveyed to all. Therefore, this community experiences itself intimately connected with the human race and its history. (GS 1)

The HIV/AIDS pandemic has become a daily distressing reality for millions of people worldwide. The Catholic Church, by reason of her own self-definition to be "the Church in the world of today", is, since fifteen years, dealing in word and deed with these new realities of life. Although much has been achieved, some questions remain unanswered. One of them is the position of the Catholic Church regarding the topic of infection protection in the context of HIV/AIDS. It is the most intensely observed subject not only in the context of public reception but also regarding its controversial discussion within the Church. In view of the vital significance of the pandemic for many people and the complexities of related challenges, the overall social discussion and the one within the Church must not be narrowed to the question of condoms; but, it is equally unhelpful to hush it up or to think that one could get rid of it - perhaps by responding hastily. Reasons for dealing with this question are the following:

- The Catholic Church is running a lot of health institutions as well as schools and other educational institutions in developing and in industrial countries.
- This brings the Church in direct contact with very many persons (potentially) affected by HIV and AIDS.
- Therefore, the Church is bound to be concerned with the subject "infection protection in the context of HIV/AIDS" and to formulate a position which is ethically tenable and also helpful. This is a requirement of solidarity with all people, in particular also with those working in institutions and in educational and pastoral work respectively, even more so as also non-Catholics attend the institutions of the Catholic Church. This demands a factual and realistic debate on the condom issue.

This study will face this debate, on the one hand aware of the peculiar question 'infection protection' in the overall context of HIV/AIDS and on the other hand hoping that it will rather contribute to a reflexion on principles which in turn may enable a more differentiated discussion within this difficult terrain[i].

Empirical results

According to the latest global report on AIDS from UNAIDS and WHO[ii] (Date: 01.12.1997) a total of more than 30 mio people are presently HIV infected worldwide, among them 1,1 mio children below the age of 15 years. This corresponds to a ratio of 1:100 in the age group 15 to 49 years and a rate of 16 000 new infections per day. If the present trends in transmission rates continue, the total number of cases will increase to 40 mio by the year 2000. Meanwhile up to 25% of the adult population in some Subsaharan countries (Botswana, Simbabwe) are HIV positive.
Some conclusions may be drawn from the empirical facts as well as from results of medical research:

- HIV/AIDS potentially affects all people, not only homo- or bisexual men as has been assumed and claimed for a long time.
- The main way of transmission of the virus is heterosexual intercourse.
- There is still no cure for AIDS in spite of great successes in some patients with the so-called combination therapy which, however, is hardly affordable, especially in developing countries.
- Developing countries where more than 90% of the infected are living, have been affected worst by the pandemic, presently in particular the countries of Subsaharan Africa, the Caribic, Southeast Asia and India.
- The correlation between poverty and underdevelopment on the one hand and the higher risk of HIV infection on the other is becoming more and more visible (see the subtitle of the WHO Health Report 1996 "Fighting disease, promoting development").
- In the fight against HIV/AIDS the main attention has to address information and prevention, i.e. the prevention of infection (UNAIDS estimates that 90% of the infected do not even know about their infection).
- Condoms remain the most effective artificial protection against infection for as long as a vaccine is not found; the development of such a vaccine will still take a very long time, even according to the most optimistic estimates of experts.
- Perspectives raised within the field of social ethics have to be introduced more and more when discussing subjects which are classically treated in the field of individual ethics.

Reading of official declarations of the Church concerning HIV/AIDS (1987-1996)

Within the Catholic Church there are a variety of announcements and declarations at different levels regarding the subject HIV/AIDS[iii]. Comparing them leads to the following results:

- Approximately from 1987 onwards, i.e. about seven years after the first major appearance of AIDS and four years after the discovery of HIV which is responsible for the immune deficiency syndrome, the Catholic Church has become aware of the new challenge of HIV/AIDS. A magnitude of announcements are made, in particular by regional and national bishops' conferences in Europe, USA and Africa, i.e. in those regions which were first struck by the pandemic. Initially, the Vatican is dealing with HIV/AIDS problems only in the context of other issues.
- These documents focus on concrete pastoral questions. There is a wide consense: HIV infected persons and AIDS patients have to be assisted and helped. Human dignity demands that one must not discriminate against HIV affected persons, their relatives need to be supported, AIDS is recognised as a pastoral problem. Clerics as well as lay people, the State, the society and the Church as a whole are called to do their utmost to prevent the disease and to assist the affected. AIDS is not interpreted as God's punishment but as an opportunity for individuals as well as for societies and the Church to reflect on present behaviours and attitudes. Without playing down the grief and suffering of the affected, one speaks occasionally of a chance to remind oneself of Christ and to increase awareness of the sources of faith as well as of specific forms of spirituality.
- But nevertheless, a high degree of self-righteousness is visible in many of the documents in spite of all the declarations about non-discrimination and the non-judgemental approach to the affected. Sometimes the impression might come up that one feels affirmed through nature, i.e. through the disease which proves one's interpretation and understanding of a successful life which has always to be a morally good one. The arguments of some authors regarding the subject of homosexuality are

raising doubts if the necessary respect is applied to the one or the other on account of their being human. It is not always easy to draw a line to homophoby.

- As soon as deliberations leave the genuine pastoral area a more diverse picture of the different positions becomes visible, even only in nuances. In particular, the early documents sometimes seem to be driven mainly by the necessity to find answers under pressure of time and as pragmatically as possible to quite concrete questions which are addressed to the Church by society and representatives of the State respectively.[iv]
- The positions become more and more uniform between 1987 and 1989. The highlight of uniformity is a conference in the Vatican in November 1989, arranged by the Papal Pastoral Council in the service of the sick under the title: "Life: Why? AIDS"[v]. Not before 1996, the Social Commission of the French Bishops' Conference dares to adopt a position differing *expressis verbis* from the Roman one[vi].
- Another development can be observed: In earlier documents there were always arguments against the shadowy picture of 'safe sex' falsely related to the use of condoms. But later documents admit that the ideological adversary has always spoken only of 'safer sex', as a result of which the argument looses ground that condoms are less than hundred percent safe.
- Mainly official documents of the Church argue moralisticly, i.e.: If it is sinful to have sexual relationships outside marriage (or, for instance, to use drugs), then it must also be sinful to propagate or even discuss measures (i.e. the use of condoms or of clean needles by users of intravenously given drugs) because these potentially promote behaviours already recognised as sinful or amoral.

  This attacks the more or less pragmatic approach taken by almost all medical doctors and governmental representatives who argue as follows: One has to realise that there are certain ways of behaviours in any society which expose people to an infection risk. Independent of all moral and ethical valuation of these behaviours, the first and even ethically required step is to prevent these completely or, respectively, to make them safer.
- The arguments which are brought up against the use of condoms under any circumstances, are partly empirically based and partly of a moral nature:
  - Condoms do not offer a 100% protection; it is therefore irresponsible to advertise them.
  - They bring about exactly the opposite of what they actually want to achieve: the prevention of the spread of the virus. By giving a false feeling of safety, people's behaviour will not change to the better but, on the contrary, promiscuity and permissiveness are reinforced particularly among young people. This does not only open doors for a further spread of the virus but is also an offence against the biblical law which states that sexuality has its exlusive place within marriage. The (empirical) accusation of ineffectivity is linked with a moral argument.
  - The use of condoms offends nature and therefore also human dignity as *Humanae Vitae* and *Familiaris Consortio* impressively declare. Thus, it offends the traditional teaching of the Church, the "Expertress in human matters".

Valuation of these results

What value has to be attached to these three arguments of the official announcements of the Church for a ban on condoms without exception?

The first two arguments are not tenable as formulated:

- Those favouring condoms had always stressed that faithfulness between two HIV negative partners is the only safe protection against infection with the virus (safe sex). In all other instances they claim that the use of condoms and the renunciation of risky sexual practices decrease the danger of an infection substantially but not completely (safer sex). This had also been embedded in relevant governmental information campaigns as well as in school curricula. Thus, the integral view of the human being is respected, especially if one tries to incorporate HIV prevention into the greater context of a society holding a variety of different moral values and practises. Nevertheless it must be noted that the Roman interpretation of integrality differs from that of the just described approaches.

- The proposition that to propagate "safer sex" could give additional incentives for promiscuous behaviour is an assumption which cannot be corroborated by empirical evidence. On the contrary, numerous studies show a substantial decrease in the rate of new infections due to information programs, especially among so-called high risk groups[vii]. By the way, this objection that safer sex increases promiscuity and permissiveness could also be raised against a vaccine revealing the dubious nature of the arguments.
- The third objection against condoms reaches the hard core of the inner-Catholic debate: the discussion about the value and interpretation of *Humanae vitae* and its attempt of resisting the moral decay of modernity and of making the individual absolute.

The statements of the moral encyclicals *Humanae Vitae* (HV) and *Veritatis Splendor* (VS)[viii]

A close look to the two moral encyclicals *Humanae Vitae* (1968) and recently *Veritatis Splendor* (1993)[ix] reveal results regarding the subject of this assessment as follows:

- The statements of *Humanae Vitae* are unambigious: With the exception of the method of time selection every contraceptive act is considered to be "*intrinsic inhonestum*", dishonest in itself.
- The establishment by the Council of a commission of experts to clarify "certain questions which still need further careful examinations (see GS 51, Ref. 14)" points to a dynamic understanding of the Church's teaching regarding birth control. Yet, the discussion has hardly developed further during the past 30 years in spite of proposals from theologians meant to lead further on.
- On the contrary: there has not been any change on the part of the highest Teaching Authority of the Church; in addition, the tone of discussion, particularly as voiced from Rome, has gained sharpness. Meanwhile, the agreement with the position represented in *Humanae Vitae* has become the decisive point regarding appointments of bishops, filling of professoral posts or their revocation etc. (compare VS n. 114-116).
- Nevertheless, grave objections are raised by opponents of the Roman position, i.e. actually by the majority of at least the (West)European and (North) American theologians, renowned Catholic professionals (i.e. medical doctors) as well as by the great majority of the faithful:
  - *Humanae Vitae* has the status of a binding but not infallible decision of the highest Church authority. This means that the judgment of conscience of the individual may, after careful examination also of the Church's teaching, arrive at a conclusion which is different from that of the Teaching Authority.[x] (This had been pointed out a.o. by the famous Königstein Declaration of the German Bishops' Conference, the Austrian, the Belgian as well as many other bishops' conferences.)
  - The manner in which both encyclicals were introduced and their positions sustained stands in certain points in diametrical contrast to the ecclesiology proclaimed by the second Vatican Council: Neither is there any consideration for the collegial character of the episcopate also in regard to the official teaching of the Church (see LG 25) nor to the testimony of God's people who participate in "Christ's prophetic mission" (see LG 10, 12, 35, 37)[xi]. These findings weaken the obligatory status of these encyclicals substantially.
  - By using different ways, the post-Council moral theology also arrives at other positions as regards content than representatives of the Roman Teaching Authority:
- Instead of maintaining the principle of double function of the marital act (expression of the love between partners and openness towards children) through limitations and prescriptions as regards the physiological structure of the act itself (position of *HV*), many theologians stress that the openness for children in principle has to be put into the context of 'marriage as a life project'.[xii]
- Regarding the unchangeability of the *doctrina constans* which represents one of the cornerstones of the Roman argumentation, there are examples that the Church has partly changed positions which were maintained over centuries on account of new developments and circumstances. The most impressive recent ones are the declaration of the Council regarding the freedom of religion, the teaching about the "just war" (*iustum bellum*) in view of the nuclear threat. There are also indications of a change in the Roman position in respect of responsible population- and family policies[xiii]. In strictly maintaining old positions of sexual ethics, the Church does no longer do justice

to its own claim to be a Church in the world of today, simply because her own joy and hope, her own sorrow and fear are no longer those of present-day people.

- Post-Council moral theology has developed a new awareness of Casuistry[xiv]. Differing from the Roman approach (which only considers the 'objectivity', the material content of an act), all circumstances and their contextuality are highly relevant for the moral-ethical evaluation of an action. Thus, through this different consideration of the overall situation in which an action takes place, moral theologians and the Teaching Authority arrive in their assessments at divergent conclusions also regarding the so-called intrinsically, i.e. in itself, bad acts.
- By applying old principles of moral theology in respect of infection prevention such as the "act with double effect" *(actus cum duplici effectu)* or the lesser evil (*minus malum*), the consequence for theology is that the use of condoms may, in some instances, not only be ethically legitimate but eventually even a must[xv].

Although there are grave reservations against the argumentative as well as the theological status of these two moral encyclicals, they nevertheless represent the present position of the highest Teaching Authority. In consequence thereof, the results of reading *HV* and *VS* leads to the following results regarding 'infection protection in the context of HIV/AIDS':

- As, on the one hand, the condom is presently and probably for some time to come the most effective technical means to prevent HIV infection, and as it has on the other hand also a contraceptive effect, one automatically and willy-nilly leaps from one level to another in the Catholic context: from discussing the prevention of HIV infection which is a new problem to the subject of contraception for which a definite authoritative position exists.
- At the level of individual ethics at which the whole examination has taken place so far, the "experts in the sciences" will continue to try "to clarify by their common scientific endeavours the prerequisites for a morally unquestionable birth control" (GS 52). In view of the present situation of Church politics it is however doubtful if their findings would be accepted by the highest Teaching Authority too. Even if this would happen it would only mean a partial response for the field of HIV. In the end, the whole discussion since *HV* revolves around the practice of contraceptive methods within the context of marriage. Nevertheless, on account of the above-named leap whose direction is not predestined, the results of moral theology regarding contraception are also important for the question interesting us here. For, at least in the countries of the South, often one marriage partner is HIV negative and the other one HIV positive.
- However, as this represents only a partial aspect of an essentially complex phenomenon, we have also to examine the possible helpfulness of other approaches to the question "infection protection in the context of HIV/AIDS", namely those more oriented towards socio-ethical and pastoral-theological approaches.

The socio-ethical perspective[xvi]

In the course of the development of the HIV pandemic, it has become increasingly obvious that poverty and AIDS are inseparably entangled with each other. There are many causes for the rapid spread of the virus: the economic structural crisis which sharpened in recent years in many regions and the processes of social desintegration linked with it, the breaking up of grown structures and social relationships through migration from the land and migratory labour as well as the innumerous military conflicts and refugee movements connected with them; poverty prostitution, the low status of women in many societies, lack of resources for an adequate health service, a low educational standard and poverty as additional obstacles for information and enlightenment; the long latent period of the disease, the daily struggle for survival which has priority over infection protection. The keywords 'pauperization and feminization of AIDS' focus on a development which does not only apply to the countries of the South but which resulted also in a rapidly incrasing spread of the disease within socially marginalised groups and (ethnical) minorities in industrialised countries[xvii].

The recognition of the connection between poverty and AIDS should lead to definite consequences for actions of Governments and the Church. Worldwide, the Church is one of the few institutions which are

credibly taking care of the poor. Their situation is substantially worsened by HIV/AIDS. For reasons of justice already it is necessary to attempt with all available means to keep this additional burden away from the people. The unequal global distribution of resources practically excludes 'curative' treatment of HIV infection in the countries of the South on account of the extremely high costs of the so-called combination therapy; the latter also leads to severe distribution fights in industial countries. Thus, the field of prevention gains additional importance for this still incurable disease.
As all AIDS information programmes do not help if people lack the material possibilities to make use of eventually realised new insights it is necessary that the AIDS pastoral of the Church is always integrated in the greater framework of human development. This approach has a good and long tradition in respect of development problems in the social encyclicals of the Church (see in particular *Populorum Progressio* and *Sollicitudo Rei Socialis)*. Their realizations and results have to be extended in order to account also for the new situation due to HIV.
On account of the link between developmental issues and HIV/AIDS, the debate about the pandemic becomes a pressing and genuine task for social ethics, an area in which the Catholic Church has set standards for more than 100 years. Yet, one has also to keep in mind that the socio-ethically motivated pastoral work of the Church may suffer enormous damage through rigidly formulated and presented individual ethics[xviii]. This background apparently increases the urgency to harmonise the perspectives of social ethics and individual ethics if the Church does not want to experience a growing loss of credibility and in this way risk a drastic limitation of her chances for action.

The pastoral perspective[xix]

Representatives of a more pastoral-theological approach insist on the following reflections:
- Concrete human beings, as one meets them here and now, are in the centre not only of all pastoral action but of all theology.
- Model for all actions of the Church should be the gospel of Jesus who came to save sinners and not the just, who did not only believe in a second chance but in seven times seventy chances, who despised hardly anything as much as those who "bind together heavy burdens and put them on men's shoulders but hardly bend a finger themselves to move them" (Mt. 23.4), who shared meals with the sinners and who requested "he who is without sin shall throw the first stone".
- Each time has its own challenges which, frequently, can be mastered only insufficiently with strategies which have been developed, formulated and successfully implemented for questions and problems of the past.
- When searching for ways for today which respond to questions of our time, it is indispensable to deal with grey zones, to be willing to compromise.
- Theological ethics should not only reflect on ethical principles but should also bear always the tension between the envisaged goal and that what should be done and the actual behaviour of the people which remains short of reaching this goal.
- Each way to this goal has many different stages and compromises are necessary at each of them - compromises, though, which the Church should make possible and help to carry if she wants to assist the real human being to reach this goal.

Conclusion

Representatives of the most diverse positions within the Catholic Church concur on the principle "priority of life". The debate is only on the way by which this principle is best realised: through an uncompromising message of pure teaching where any deviation would be perceived as a supposed betrayal of God's plan of creation and the nature of man based on God, or through an attempt to give people an understanding of the gospel by taking their concrete situation seriously as a basis for a gradual reversion in their way of life. It is at this point, that the attitude regarding the subject of infection protection in the context of AIDS is decided. That it is a decision in its true sense has been shown by the course of the study up till now. Theologically both options are at least equally well legitimized and safeguarded.

Digression: An actual example for the second option is offered by the declaration of the Pastoral Commission of the German Bishops' Conference[xx]:

In its third chapter "AIDS as a task for the Church" the Bishops request congregations and Church institutions to show solidarity with HIV infected persons according to Christ's example, to provide practical help, to integrate them into the communities and to create "a climate of confidence, openness and acceptance, also regarding their individual life style (16). In order to make their unconditional acceptance visible and perceivable for them, restraint in judging their life situation is called for. The affected are said to easily take offence and feel rejected on account of the 'special status of their disease'. "In such a situation, it is in line with the Christian message to put ethical judgements not into the foreground".(16) The question about guilt of the affected "should not be a condition for charity in the imitation of Christ. Besides, it is not justified to allocate a different place value on guilt than in other circumstances" (16).

In all that the German Bishops do not want to exclude the 'tabu theme' of responsible sexual behaviour. It is to be transmitted that sexual intercourse has a legitimate place within a firm relationship with a partner which is protected by faithfulness and confidence; according to Catholic understanding the place for such a relationship is marriage. "However, this conviction may not lead to a condemnation of people." (17) Regarding the subject prevention, the Bishops state that comprehensive and precise information is needed in order to integrate the affected and to prevent further spread of the disease. Prevention is said to have a definite priority and has to be dealt with responsibly whereby "the principles of Catholic ethics have to be considered also" (17). The subject 'condoms' is only touched upon indirectly: "In view of the factual threat to life which emanates from the immune deficiency AIDS everything has to be done to prevent an infection." (17) However, there is the general rule that information has to be comprehensive and valid, but also moderate and not to be used as a "concealed advertising for promiscuity".

The Bishops allocate a special section to "AIDS as a theme in liturgy and preaching". With this they clarify that the debate about the pandemic must not be left to Church diaconia and charity only but that it has its place also in the daily life of the community. The following quotation represents the core of the paper:

> "It is imperative in the light of the gospel to let one's interaction with them (HIV infected, AIDS patients and their relatives) be guided by the model of a Church which is charitable, serving and acting in solidarity. When people receive this service of love which is rooted in the gospel, they may experience faith." (16)

The German Bishops have taken up a clear stand with this declaration similar to that by their French fellow clergymen in 1996: Their paper shows a definite pastoral direction in which the "ethical jugdement does not stand in the foreground". Besides, it is formed by being clearly rooted in pastoral practice as well as in the desire to reveal visions in regard to the contact with HIV/AIDS in communities and Church institutions.

The arguments which are (still) expressed by the Teaching Authority against the use of condoms as protection against HIV infection, may be summarised in three keywords: ineffectivity, increase of promiscuity, deviation from the tradition of the teachings of the Church in respect of artificial contraceptive measures. The first two objections cannot be verified empirically; on the contrary, the opposite applies. As regards the third one: This study has shown that there exists all but one unanimous opinion in regard to sexual ethics within theology. Therefore, the one position within the Catholic Church does not exist, provided the different levels within the Church are considered. This widens the scope of pastoral involvement.

It is undisputed also among theologians who differ with Rome that the traditional teaching contains many precious aspects which need to be sustained and should continue to be preached as goals to be strived for. Yet, pastoral approaches reach beyond this, consider human beings in their concrete life situation. The individual as well as the Church as a whole are on the way in this world, also on the way to realize ideal values and morals. A way consists of many single steps, a fact which the Roman

Episcopal Synod of 1980 took into account with the "law of graduality". This law has also to be applied within sexual ethics, i.e. it is necessary on the one hand to keep on reminding oneself of the actual goal, but on the other hand, to assist people on their own way to reach this goal.

In the context of HIV/AIDS it is possible to put this just described approach into concrete form through a 'gradual preventive ethic' (Gillen) according to the proven pastoral theological maxime of "meeting the person where he/she is standing at the moment". This means an approach which first and foremost addresses itself to the individual who is simultaneously subject and object of the pastorale. If, in this context, compromising solutions regarding the sexual ethical values represented by the Church seem to become necessary, they are in their majority covered by an appeal to principles of moral theological tradition. Therefore, the pastorale does not act within a theological vacuum.
With these principle reflections in mind, it is possible to show ethical as well as pastoral borderline cases where a strict application of the Roman position appears at least as questionable:

- the example of a familiy where one of the two partners is HIV positive but the marriage needs to be sustained at least for the sake of the children
- the example of women (with children) who are continuously living in danger of being misused by their drunk (husbands) partners
- the example of poverty prostitution
- the example of a couple where at least one of the two partners uses intravenous drugs
- the example of adolescents who are just discovering their sexuality, even if this is perhaps done in a manner which stands diametrically opposed to the goal set by the Church
- the example of a person who, for whatever reasons, does not live in a firm relationship und frequently changes partners.

Casuistric methodology would demand an exact individual examination of the relevant context and the accompanying circumstances in respect of all these examples in order to arrive at an ethically justified option how to decide. Stereotyped use of deducted pinciples does not do justice to specific cases and therefore not to the persons affected.

If the pastorale and with it the Church do not want to block their way to reach also these persons (and there are very many of them!), then they must start with the human being in its actual situation. This may, in the sense of *minus malum*, include also the recommendation of a relatively safe sexual behaviour through the use of condoms even if it is sometimes not easy for the Church to bear such compromises. It is obvious that the pastorale must not stop there if it truthfully wants to help people and does not wish to be suspected of double standards in moral matters. But the approach for concrete action, the first step on a long way, starts here.

In summary it may be said that, under specific circumstances which need to be examined closely in each case, the use of condoms may be advisable out of pastoral inevitability. This is always to be understood as the first step in the direction of achieving an essentially more comprehensive goal. Such action is not necessarily standing in constrast to moral theology but, on the contrary, may frequently directly appeal to it. Even if the highest Teaching Authority presently has serious reservations towards such conclusions, there are those concrete persons who often seek advice and help in almost desperate situations and are a sufficient reason for such an approach.

---

[i] Another technical comment: this study is the summary of a substantially more comprehensive examination under the title: Positions within the Catholic Church regarding the subject 'Infection protection in the context of HIV/AIDS' which may be requested from the Medical Mission Institute, Department of Health Services and HIV/AIDS, Salvatorstr.. 22, D-97074 Würzburg.

[ii] See in internet under http://www.unaids.org

[iii] See annex

[iv] This could be an explanation why the first document of the US American Bishops has been much more open than the successive document. Critics from their own lines as well as massive pressure from the Vatican had led to an unanimous toning down of the passages queried. See: Keenan, James F., Prophylactics, Toleration and Cooperation: Contemporary Problems and Traditional Principles, in: International Philosophical Quarterl

Vol. 29 No. 2 Issue No.4 (1989), 205-220, as well as the introductory comment on the publication of the 2nd document "Called to Compassion and Responsibility: A Response to the HIV/AIDS Crisis, in: Origins Vol. 19 (1989), 423-424

[v] Documented in: Dolentium Hominum, Vth Year - No. 13/1990/1 Vatican City

[vi] See Sida: la société en question, Paris 1996

[vii] See a.o. de Vincenzi I. and the European Study Group on Heterosexual Transmission of HIV, a longitudinal study of human immunodeficiency virus transmission by heterosexual partners, in: New England Journal of Medicine 331 (1994), 341-346; McKinley J.C., A ray of light in Africa's struggle with AIDS, in: New York Times of 07.04.1996, 1; Rojanapithayakorn W., The one hundred percent programme in Thailand, an update, presented at Xth International Conference on AIDS, Yokohama, August 7-12, 1994, Abstract 478C; Nelson K.E: et al., Behavioral dynamics of declining HIV infection rates among young men in Northern Thailand, presented at XIthe International Conference on AIDS, Vancouver, July 7-12 1996, Abstract WE.C.3521; Robinson N.J. et al, Two million HIV infections prevented in Thailand: Estimate of the impact of increased condom use, presented at XIth International Conference on AIDS, Vancouver, July 7-12 1996, Abstract WE.C.3521; Robinson N.J. et al, Two million HIV infections prevented in Thailand: Estimate of the impact of increased condom use, presented at XIIth International Conference on AIDS, Vancouver, July 7-12 1996, Abstract Mo.C.904; WHO, Weltgesundheitsbericht 1996 - Krankheit bekämpfen, Entwicklung fördern, Marburg 1996, espec. 33,105.

[viii] See regarding the general development from HV to VS: Droht eine dritte Modernismuskrise? Ein offener Brief von Peter Hünermann an den Vorsitzenden der Deutschen Bischofskonferenz, Karl Lehmann, in HK 43 (1989), 130-135, as well as McCormick, R.A., 'Humanae Vitae' 25 years Later, in: America Vol. 169 No.2 (1993), 6-12; and the reaction on it: Flannery, Kevin and Koterski, Joseph, Paul VI Was Right, as well as McCormick, A Response, both in: America Vol. 169 No.8 (1993), 7-14

[ix] See regarding its reception generally: Mieth, Dietmar (Hg.), Moraltheologie im Abseits? Antwort auf die Enzyklika "Veritatis Splendor" (QD 153), Freiburg, Basel; Wien 1994; McCormick, R.A., in: Orientierung 57 (1993), 229-231; Hilpert, K., Glanz der Wahrheit: Licht der Schatten. Eine Analyse der Moralenzyklika, in: HK 47 (1993), 632-639; Knauer, P., Zu den Grundbegriffen der Enzyklika "Veritatis Splendor, in: StdZ 212 (1994), 14-26; for non-German papers see under Mieth (ed.), 257 Anm.28

[x] See GS 16, 17 and the comment of Ratzinger in LThK, Ergänzungsband III, 328

[xi] See Weber, Leonhard, Exkurs über Humanae Vitae, in LThK, Ergänzungsband III, 607-609

[xii] See as an example Cahill, Lisa Sowle, Abortion, Sex and Gender: The Church's Public Voice, in: America Vol. 168 No. 18 (199), 6-11

[xiii] See an interview with Cardinal Ratzinger, Chairman of the Congregation for the Faith, in: Die Zeit vom 29.11.1991, in which he had declared: "Zum Weltbevölkerungsproblem ist vom kirchlichen Lehramt, soweit ich sehe, noch nicht viel Hilfreiches gesagt worden." See also: Die deutschen Bischöfe - Kommission Weltkirche, Bevölkerungswachstum und Familienförderung. Ein kirchlicher Beitrag zur Diskussion, edited by the Sekretariat der deutschen Bischofskonferenz, Bonn 1993

[xiv] See in summary Keenan, James f., The return of Casuistry, in: Theological Studies 57 No.1 (March 1996), 124-139. Regarding the reproach of proportionalsm in VS see McCormick, R.A., Veritatis Splendor and Moral Theology, in America Vol. 169 No. 13 (1993), 8-11

[xv] See Tuohey, John, Methodology or Ideology: The Condom and a Consistent Sexual Ethic, in: Louvain Studies Vol. 15 No. 1 (1990), 53-69; Kalam, Thomas, Sexuality Issues in AIDS, St. John's Medical College, Bangalore, o.J.; Häring, Bernhard, A call to radical conversion, in: Costick, Vicky (ed.), AIDS - Meeting the Community Challenge, Middlegreen 1987, 87-93; Gründel, Johannes, AIDS - Anlaß zur Enttabuisierung ethischer Fragestellungen, in: ders. (Hg.), AIDS. Herausforderung an Gesellschaft und Moral, Düsseldorf 1988, 80-106; Moling, A., Is it allright to use condoms to prevent the spread of AIDS?, o.O., Jan. 1990

[xvi] See HIV/AIDS und kirchliche Entwicklungsarbeit. Arbeitspapier des Bischöflichen Hilfswerks Misereor, 15.11.1995; Rüppel Joachim, Gesellschaftliche Aspekte der HIV/AIDS-Pandemie, Missionsärztliches Institut Würzburg, Arbeitsgruppe AIDS und internationale Gesundheit, September 1994; Latinamerica Press, Themenheft: The Pauperization of AIDS, Vol 28 No. 9 (1996)

[xvii] See Rosenberg, P.S., Scope of the AIDS epidemic in the United States, in Science 270 (1995), 1372-1375

[xviii] This may be documented by one voice: "It is possible, too, that aspects of Catholic teaching on sexual ethics are part of the problem rather than helping to provide a solution. Time and again I found the credibility of the Catholic Church in this field compromised by the absolute intransigence of its stance on contraception and the translation of this stance by some bishops into outright opposition to any government programmes involving the promotion of condoms. This was said to me not just by some critics of the Church but frequently by utterly committed Catholics deeply involved at a practical level in the field of HIV/AIDS. (...) The Church has a most serious responsibility to make sure that its teaching on sexual ethics does not impose burdens on men and women which would, in practice, oblige them to live negatively rather than positively with HIV/AIDS." Kelly, Kevin, Living with HIV/AIDS, in: The Tablet (13.5.1995), 597-599, 599

[xix] See McDonagh, Enda, The Moral Aspects of AIDS, in: Report of the Caritas Internationalis Seminar on AIDS in St. Lucia, July 1989, 27-35, the same author, Theology in a Time of AIDS, in: Irish Theological Quarterly Vol. 60 No. 2 (1992); Regan Dennis M., Perspectives from Moral Theology, in: Vitillo, Robert (ed.), The Pandemic of AIDS A Response by the Confederation of Caritas Internationalis, Final Report of the Consultation Co-sponsored by CI and CAFOD at London Colney, 14./15.12.1987, o.O. February 1988, 58-67; Vitillo, Robert, Theology and Transformation: The Challenge of HIV/AIDS to the Church, delivered at: Consultation of the Strathclide Interchurch AIDS Project, Glasgow, February 1993; the same, Theological Challenges posed by the Global Pandemic of HIV/AIDS. A Reflection with the Theological Study Group on HIV/AIDS, Boston College, 23.3.1994; Filochowski, Julian, A Measure of our Humanity, in: Catholic International Vol. 2 No. 20 (1991), 961-968; Gillen, Erny, Plädoyer für eine therapeutische Diakonie. Zur Ethik des gesellschaftlichen und kirchlichen Umgangs mit der Krankheit AIDS, AIDS-Workshop in Köln (veranstaltet von CI und CIDSE), 28.4.-2.5.1990; Fuchs Ottmar, AIDS als Ernstfall diakonaler Pastoral, in: AIDS - sozialer und ethischer Prüfstein für Kirche und Staat, hrsg. von der Arbeitsgemeinschaft für Gefährdetenhilfe und Jugendschutz in der Erzdiözese Freiburg e.V. (AGJ) und der Katholischen Sozialethischen Arbeitsstelle e.V. (KSA) Hamm, Freiburg 1988, 27-56

[xx] Compare with the following: Die deutschen Bischöfe - Pastoralkommission, die Immunschwäche AIDS - Eine pastorale Aufgabe der Kirche, edited by the Sekretariat der Deutschen Bischofskonferenz, Bonn 1997; in brackets the relevant page numbers; see also Foitzik, Alexander, Zeichen der Zeit. Kirchliche Stellungnahme zur Immunschwäche Aids, in: HK 52 (1998), 16-19

APPENDIX

Official Church announcements used[1]

a) Declarations from the Vatican

Gaudium et Spes, Pastorale Konstitution über die Kirche in der Welt von heute, in: ²LThK, Ergänzungsband III, Freiburg 1968
Johannes Paul II., Ansprache an die Teilnehmer am Internatinalen Kongreß für Moraltheologie, in: L'Osservatore Romano, Wochenausgabe in deutscher Sprache, Nr. 48 (25.11.1988), 8-9
Johannes Pault II, Dem Leben in Liebe dienen. Apostolisches Schreiben über die Aufgaben der christlichen Familie in der Welt von heute, mit einem Kommentar von Franz Böckle, Freiburg, Basel, Wien 1982
Johannes Pault II., Veritatis Splendor - Geist der Wahrheit (Kommentar: Leo Scheffzyk), Stein am Rhein 1993
Lumen Gentium, Dogmatische Konstitution über die Kirche, in: ²LThK, Ergänzungsband I, Freiburg 1968
Paul VI., Enzyklika über die rechte Weitergabe menschlichen Lebens, Von den deutschen Bischöfen approbierte Übersetzung, edited by the Sekretariat der Deutschen Bischofskonferenz, Trier 1968

b) Declarations of regional and national Bishops' Conferences (in alphabetical range of the country of origin)

Declaration of the Australian Bishops, 20.05.1987, in: Vitillo 1988, 104-106
Die Bischofskonferenz Brasiliens, Die Kirche und AIDS, in Weltkirche 13 (1993), 27-30
Die deutschen Bischöfe - Pastoral-Kommission, Die Immunschwäche AIDS - Eine pastorale Aufgabe der Kirche, Bonn 1997
Social Comission of the Frech Bishops' Conference, Sida: la société en question, Paris 1996
Ghana Catholic Bishops' Conference, Pastoral Letter on AIDS, 5.11.1990 (*)
Hirtenbrief der Bischöfe Kaliforniens, 8.4.1987, in Vitillo 1988, 111-114
Statement of the Canadian Bishops' Conference, 4.3.1987, in: Vitillo 1988, 110
Statement of the Bishops of New Zealand, 14.5.1987, in: Vitillo 1988, 110
Pastoral Letter Regarding AIDS by the Catholic Bishops of Kaduna Ecclesiastical Province, Nigeria, 3/1994 (*)
The Catholic Bishops of Kenia, The Challenge of AIDS, June 1987, in: Vitillo 1988, 127-128
Catholic Bishops' Conference of the Philippines, Hirtenbrief der Bischöfe zu AIDS, in: Weltkirche, 13 (1993), 151-153
Ständiger Rat der spanischen Bischofskonferenz, 12.6.1987, in: Vitillo 1988, 106-108
The AIDS Epidemic. Message of the Catholic Bishops of Uganda, 8.9.1989 (*)
Der Ständige Ausschuß der Katholischen Bischofskonferenz der USA (USCC Administrative Board), The Many Faces of AIDS: A Gospel Response, 11.12.1987, in Vitillo 1988, 143-150
The U.S.-American Bishops' Conference, Called to Compassion and Responsibility: A Response to the HIV/AIDS Crisis, in: Origins 19 (1989), 421-434
Choose to Live, Joint Reflection by the Christian Churches in Zambia, January 1988, in: Catholic International 2 (1991), 969-973
Zimbabwean Bishops' Conference, AIDS and Our Moral Responsibility, October 1987, in: Vitillo 1988, 98-100
AIDS - the Christian Response. A Pastoral Letter from the Heads of Denominations of Zimbabwe, 2.5.1989, revised 9.6.1990 (*)

[1] the titles marked with (*) are in the library of the Medical Mission Institut, Unit for Health Services and HIV/AIDS, Salvatorstr. 22, 97074 Würzburg